

THE OCCUPATION DERMATOSES OF THE PARAFFIN WORKERS OF
THE SCOTTISH SHALE OIL INDUSTRY, WITH A DESCRIPTION
OF THE SYSTEM ADOPTED AND THE RESULTS OBTAINED
AT THE PERIODIC EXAMINATIONS OF THESE
WORKMEN.

A THESIS BY ALEXANDER SCOTT, M.B., C.M., FOR THE DEGREE
OF DOCTOR OF MEDICINE : GLASGOW UNIVERSITY.

ProQuest Number:27555658

All rights reserved

INFORMATION TO ALL USERS

The quality of this reproduction is dependent upon the quality of the copy submitted.

In the unlikely event that the author did not send a complete manuscript and there are missing pages, these will be noted. Also, if material had to be removed, a note will indicate the deletion.



ProQuest 27555658

Published by ProQuest LLC (2019). Copyright of the Dissertation is held by the Author.

All rights reserved.

This work is protected against unauthorized copying under Title 17, United States Code
Microform Edition © ProQuest LLC.

ProQuest LLC.
789 East Eisenhower Parkway
P.O. Box 1346
Ann Arbor, MI 48106 – 1346

THE DERMATOSES of the PARAFFIN WORKERS of the SCOTTISH
SHALE OIL INDUSTRY.

I N D E X.

<u>PART 1:-</u>	<u>PAGES.</u>
Introductory.....	1 - 3
Occupation Dermatoses.....	3 - 33
Bibliography.....	33 - 39
Short Note on Pathology.....	40 - 41
Short Description of the Process of Distillation of Oil Shale.....	42 - 50
The action of shale oils on animals.....	51 - 54
Note on Pathology of tumour formation on Mice.....	55 - 56, etc. ^x
Aetiology - Exciting Causes, various theories..	57 - 66
Aetiology - Predisposing Causes.....	66 - 75
Prophylaxis.....	75 - 79

PART 2:-

Results of Examinations of Paraffin Shed Workmen.....	80 - 94
--	---------

^x ADDENDUM:-

Pages 56a, 56b, 56c and 56d on histology of
tumour formation on mice have been added
after the pages were numbered.

PART 1.

THE DERMATOSES OF THE PARAFFIN WORKERS

OF THE SCOTTISH SHALE OIL

INDUSTRY.

PART 1.

THE DERMATOSES OF THE PARAFFIN WORKERS OF THE SCOTTISH SHALE
OIL INDUSTRY.

INTRODUCTORY.

This paper is based on the experience of over twenty-two years continuous practice in the centre of the Scottish Shale Oil Industry, and on the results obtained during the past three years in carrying out routine examinations at intervals of three months of every workman employed in the Paraffin Departments of the various Works in which the refining of paraffin is carried out.

While the term "Paraffin Workers Cancer" has become a classic one, it is not so generally known outside the shale area of the Lothians that those employed in the Paraffin Departments suffer from various well defined skin lesions, due entirely to their working among and handling oily paraffin in several of the stages of the process of refining. These skin conditions can be truly described as "Occupation Dermatoses", as they occur in approximately fifty percent of the workmen engaged in refining paraffin; the lesions appear in a few weeks or months after beginning work in the Paraffin Departments and persist to a greater or less/

less extent throughout the length of employment as paraffin workers; they disappear (at least the less chronic types) in a short time after ceasing work among paraffin; the types are identically the same in the workmen in the various Oil Works in which the process of refining paraffin is carried out, the only variation being in the extent of the eruptions, due to variations in the methods of working in the different Works. The skin lesions invariably conform to certain well defined types, they are most marked over the parts of the body exposed to contact with the paraffin substances which the workmen have to handle in the course of their employment.

For many years approximately two hundred men have been employed in the Scottish Oil Industry in the Paraffin Departments of the various Works, and the skin lesions incidental to that occupation have been uniformly constant in type and frequency throughout a period of fifty years. Later full details will be given as to the various conditions, their frequency and circumstances, which tend to have a modifying influence on their prevalence.

Reference numbers in parenthesis refer to the section on Bibliography, which is arranged chronologically and in/

in which I have given a short synopsis of the more important articles, and especially those in connection with the Scottish Oil Industry.

--oOo--

OCCUPATION DERMATOSES.

The skin lesions due to contact with oily paraffin in a crude or semi-refined state may be described as conforming to the following types, of which one only or several may be found on the same individual:-

1. Occupation Comedones.
2. Folliculitis and Follicular Dermatitis.
3. Dermatitis Pustulare.
4. Dermatitis Papulare. (Erythema Papulare).
5. Erythema Simplex.
6. Dermatitis Erythematos.
7. Epithelioma. (Paraffin Workers Cancer).

These, which include all forms of occupational eruptions met with in the Scottish Shale Oil Industry, will be described under their various heads.

1. Occupation Comedones:-

Several dermatologists have noted the fact that workers in paraffin and petroleum may suffer from Comedones associated with acne. When occurring in tar workers, this condition has been described as acne picealis (16). The comedones occur in parts exposed to contact with paraffin products, especially over the flexures of elbows, posterior aspects of elbows, upper aspects of shoulder joints, and occasionally over knees. Their origin is purely mechanical, being due to obstruction of the sebaceous ducts with semi-solid paraffin substances, or to thickening of the superficial layers of the epidermis, causing obstruction of ducts. They are larger than comedones met with under ordinary conditions, **more** closely packed together, and confined to circumscribed areas, being most prevalent on the anterior aspects of the body and limbs. The outer layers are pigmented and hardened. The comedones are easily expressed, but if left unattended are apt to be followed by the development of sebaceous concretions of a cystic nature, which are most commonly found over the flexures of the elbows. There is not the same tendency to acne formation, as under ordinary circumstances, possibly due to the fact that the materials/

materials-obstructing the ducts are sterile and practically antiseptic, and it is only after they have persisted for lengthened periods that any tendency towards acne formation is seen. They are not got in the usual situations in which the ordinary type of comedones is met with. On ceasing work among paraffin substances they readily disappear if regularly expressed, and do not develop further, while they are apt to recur on resuming work. Their presence is not associated with any form of systemic disturbance, such as dyspepsia, thus differing from an anomalous type described by Crocker and Wetherill (10), occurring mostly on the forehead. The facts stated all point to this condition being occupational in origin. This condition has been noted in ten instances, or about five percent of the workmen engaged in the Paraffin Departments.

Plate 1 shows comedones over flexure of elbow

Plate 2 shows a later stage where comedones are accompanied by the formation of numerous sebaceous cysts in same situation.

References - (16) Stelwagon, Diseases of the skin, 1907 page 975
 (10) Crocker, Lancet, 1888, Vol 2, page 813, and
 Wetherill. Ibid. 1889, page 169, on
 Symmetrically Grouped Comedones.

2. Folliculitis - Peri-folliculitis - Follicular Dermatitis.

This is one of the most prevalent forms of skin lesion occurring among paraffin workers, and though of little import must be included. The condition was first recorded by Ogston in 1871 ⁽²⁾, and illustrations were given in the Edinburgh Medical Journal of that year.

Folliculitis consists of destruction of the hairs and hair follicles as the result of a mild inflammatory reaction set up by the action of shale oils. The follicles become somewhat dilated and are filled with epithelial debris and dirt, so that they appear as closely grouped clusters of black points over the parts affected. Occasionally a slight peri-folliculitis occurs, in which the inflammatory condition extends to the surrounding skin, which becomes slightly raised above the rest of the skin tissue, and which ultimately becomes somewhat indurated and thickened. The most common sites are the backs of fingers and hands, and to a less degree on the forearms, the legs around the ankles, and the dorsal aspects of toes and feet, especially on the line of the extensor tendons of toes. There is never any tendency towards suppuration or sloughing, the condition persisting as described indefinitely. The usual appearance of dryness of the hands, with clusters of black points/

points on backs of fingers and hands is very characteristic among paraffin workers.

Plate 3 shows the condition on dorsal aspect of hand. Plates 4 and 5 show simple folliculitis in region of ankle. Plate 6 shows the same, of more chronic duration, accompanied by peri-folliculitis.

- References - (2) Ogston Alex., Edinburgh Medical Journal 1871/2 Vol. 17. Page 544.
 (4) Roberts, L. Liverpool Medico-Chirurgical Journal 1893, Vol. 13. Page 40.
 (Folliculitis Paraffinalis occurring in a lamp boy on a ship, ending as a peri-folliculitis).
 (9) Shuchardt, Volkmanns Samml. Klin. Vorträge 1885. No. 257, page 2212.

3. Dermatitis Pustulare.

While this is not a very prevalent condition, its occurrence as the result of contact with crude or semi-refined paraffin has been noted. Two types have been observed, -

- (A) One in which the condition is characterised by the appearance of numerous small pustules over the anterior aspect of the body and limbs, and
- (B) One in which the pustular eruption is due to the breaking down of the typical papule, which is the most prevalent form of occupational eruption.

(A) Primary Dermatitis Pustulare.

A widely distributed pustular dermatitis has been noted among youths beginning work in the paraffin departments. The pustules are small epidermic elevations, filled with pus, distributed over the body and limbs, on their anterior aspects. Each pustule is surrounded by a very slight - in degree and area - inflammatory areola. This condition appears to be due to/

to contact with semi-refined oily paraffin, which sets up an acute irritation of superficial layers of epidermis with pus formation. The channel of entrance appears to be by the hair follicles, as generally a hair is found in the centre of each pustule. This condition corresponds with that described by some writers as Follicular Pustular Dermatitis. It is most probable that, apart from carelessness on the part of the youths affected in allowing their clothing to get saturated with oily material, there is an idiosyncrasy towards the action of paraffin in some of its forms, causing one individual to be acutely affected while by far the larger proportion escapes.

Exceptionally, this condition may occur among those handling the final products, such as burning oils. I have seen a general pustular dermatitis over the whole of the anterior aspect of the body in a boy engaged filling barrels with burning oil. Pustular Dermatitis readily disappears on removing the individual from his particular form of work, or on taking precautions as regards cleanliness. The tops of the pustules dry and are shed as crusts, without further return.

(B) Papulo-Pustule.

These occur as small pustular elevations on the sites of papules/

papules, the suppuration taking place at the apical part of the papule. As a rule these are not numerous, and are usually seen in conjunction with a papular eruption. They are not surrounded by an inflammatory areola, and are due to the breaking down of papules, either from a staphylo - or strepto-coccal infection, or to the separation of a small necrotic area from the centre of the papule, after which the papulo-pustule disappears.

Plate 7 shows papulo-pustules accompanying papules.

4. Papular Dermatitis.- Erythema Papulare.

This is by far the most common type of skin lesion met with among the paraffin workers of the Scottish Shale Oil Industry, between forty and fifty percent. of the workers being affected. The papules are known in the trade as "Paraffin Plukes" and are most typical of an occupation condition both in history and distribution.

The first description of a papular eruption occurring among oilworkers was given by Allen, in American Journal of Medical Science 1862 (1). At later dates, these have been described by various writers, Ogston 1871 (2), Volkmann 1874 (3), Bell, 1876 (4), Kirk, 1903 (12), Prosser White, 1915 (21), and others. For a synopsis of these descriptions, see section on/

on Bibliography, which follows later.

Papular Dermatitis consists of an eruption of small rounded elevations of a reddish colour, varying in size from that of a small peppercorn to that of a small pea. They correspond in every way to the typical primary lesion described as a papule, being solid, superficial, rounded in shape, and containing no fluid. As a rule, the tops are convex, but occasionally there is apparent a minute central depression, from which a tiny thread-like core can be expressed or removed, and which corresponds to an occluded hair follicle or sweat duct. Several of the plates illustrating papular conditions in the less advanced stages show the umbilicated appearance of tops of papules.

I have seen in a very few instances small, soft papules with tiny, horny excrescences on tops, giving the appearance of diminutive cutaneous horns, such being situated on scrotum. Plate 14 showing a flat papule on the scrotum, also shows a tiny papule of this description, but this, on account of its very small size, is not easily illustrated.

The entrance of irritant to the superficial layers of the skin appears to be most commonly through the sweat ducts, but very frequently the hair follicles are involved, in which case they occupy the central position in a papule. The workmen affected try/

try to pick out or express this central core, after which the papule heals. There is as a rule no inflammatory areola around the typical papule. The papular eruption differs from other lichenoid eruptions, in that there is no itching or irritation, the papules do not tend to coalesce, and as a rule heal spontaneously. Ogston (2) stated that chronic subjects suffered from sleeplessness, loss of weight, foul tongue, and other constitutional disturbances, due to the irritation and pain of the skin, but present-day experience differs from this description, as the eruptions cause no inconvenience from irritation and itching, and I have never seen marks of scratching over the affected parts, while there is certainly no systemic disturbance. It has been frequently noted during the routine examinations of the workmen that the sites of papules vary from time to time, and that between the examinations some have healed and others have appeared in different situations. The papules may be present singly or in two's or three's (Plate 7), or in larger numbers until there may be a diffuse eruption of discrete papules (Plate 8). As already stated, between forty and fifty percent of the workmen are affected with this type of eruption, and briefly at this stage it may be said that of those affected approximately fifty percent show/

show not more than three or four papules, forty-five percent. have a limited extent of eruption confined to a small area, and five percent. have a diffuse eruption (Full details and figures will be given under description of routine examinations). The distribution of the papular eruption is very typical. In the great majority of cases it is confined to forearms, and as a rule is most pronounced over the ulnar aspects, though it is also prevalent over anterior and posterior aspects, around wrists and on backs of hands. Less frequently a few papules are present on the shoulders, legs and dorsal aspects of feet. In old-standing cases they are seen over lower thirds of arms and around elbow joints, and occasionally on anterior aspects of body, thighs, and on face and neck. The palms of the hands and soles of the feet are never affected. Approximately seventy-five percent. of those affected have eruption on hands and arms only, twenty percent. have both arms and legs affected, and about five percent. have some eruption on the body, as well as either arms or legs. The most typical position in which the papular eruption is found is over the ulnar aspect of forearms, this being the part most in contact with the paraffin in its semi-refined state. (The method of working is illustrated later).

On/

On two occasions, I have seen papules on the scrotum (Plate 14). The earliest appearance of papules after men begin work in Paraffin Sheds occurs in from ten to twelve days, and they may persist throughout the duration of employment. They disappear a few weeks after ceasing work among the semi-refined paraffin. Plates 8, 9, and 10 show the typical eruption on the ulnar aspects of forearms, Plate 11 shows eruption on ulnar aspect of elbow, and Plates 12 and 13 show papular eruption on legs.

Occasionally in old-standing cases the papules instead of healing assume a warty appearance, due to proliferation of superficial layers of epidermis, and to growth of connective tissue cells, forming scaly warts, at first soft, but gradually becoming harder and more indurated, with a covering of dry scales which are readily detached. This warty appearance is of a permanent nature. (Illustrated by plates 15 and 16).

In the most chronic types of this condition of warty papules, there is occasionally a tendency to increase in size, accompanied by the formation of a central necrotic area, which may separate and be followed ultimately by the disappearance of the warty growth, with atrophy of the skin tissue and the formation of a scar. This condition is well/

well illustrated by plates 17 and 18. These more chronic types are as a rule associated with an old-standing induration of skin, due to chronic erythematous dermatitis. As a still more advanced stage of the condition described, the warty papule, instead of disappearing, grows until it assumes the characters of a epitheliomatous growth, with the usual clinical and pathological features of that condition. Plates 19 and 20 show large warty growths with central necrotic areas in what might be termed the stage preceding malignancy.

4. Erythema Simplex.

This consists of a mild hyperaemia, in which the redness is distributed uniformly over the parts affected. The first appearance is a slight blush, followed by a greater degree of redness, which in the early stages disappears on pressure, to reappear when pressure is withdrawn. This hyperaemia is almost always limited to the forearms, which show a generalised redness, there being no "patchiness" in its appearance. In exceptional instances a slight degree has been seen on the feet (Plate 21). Associated with the increase in colour is a marked dryness of the skin. In the later stages there is a tendency for the erythema to become slightly purplish and to remain on pressure, the pigmentation of the skin being permanent. This condition may persist for years without alteration/

alteration. In addition, there is a scaliness of the arms, in which the superficial cells of epidermis are readily rubbed off in fine scales. There is frequently seen a shiny or lustrous condition of skin, giving the arms a polished appearance. There is never at any time any tendency to moistness or exudation, and seldom are there any subjective symptoms, such as itching or irritation along with the erythema. This type of lesion frequently exists alone without the presence of other form of occupation eruption, and is somewhat prevalent among the paraffin workers. In itself it is of little importance, other than that it may gradually, over the course of years, develop into a dermatitis erythematosa. A marked thinning of the subcutaneous layer of adipose tissue, especially over forearms, has been observed after the persistence of erythema for a long period.

The condition has been seen among workers with final products of distillation of shale, such as burning oils, refined wax, petrol, etc., but more commonly these men show dryness of arms, with very little reddening or erythema. A petrol dermatitis has been described, similar to burn of first and second degrees, with vesication, etc. Page, G.B., Surgeon R.N. Practitioner 1918, Vol. 100, page 451. (23).

Plate 22 shows the shiny appearance of skin referred to above.
In/

In one instance only, both forearms showed numerous circular patches of hyperaemia, of a purplish red colour, varying in size from a sixpenny piece to that of a shilling. There was no induration or exudation, the patches were quite discrete with no tendency to coalesce. The redness did not fully disappear on pressure, there being slight permanent pigmentation. The condition was unaccompanied by constitutional symptoms, and no history of any condition to which it might be attributed was got. Being the only case of its kind seen, and varying so much from the typical occupational erythema, I do not consider that this can be included as an erythema of occupational character.

6. Dermatitis Erythematosa.

This is essentially a dermatitis venenata of a sub-acute or chronic type, due to the irritant action of semi-refined paraffin on the tissues of the skin prolonged over a lengthened period, for years in practically every instance. It represents a further extension of erythema, in which the congestion gradually merges into a chronic inflammation of the various layers of the epidermis and cutis vera, followed by induration, and, in the most advanced stages, by partial or complete destruction of small areas of the skin in the affected parts.

In/

In the first stages, the lesion consists of dull red erythematous patches distributed irregularly over the anterior aspects of forearms, either broadly linear or roughly circular in shape, and described by Ogston as a honeycombed appearance of skin (2). They are slightly raised above the surface of the skin, are very dry and somewhat scaly. At first the condition is limited to small areas, but, as it becomes more old standing, involves larger areas, the whole surface of the forearms being frequently affected (Plate 23). Associated with this erythematous condition, there is usually pigmentation occurring in small patches over the parts involved.

This erythematous stage may persist for long periods without further change, or healing may take place, the redness disappearing, being replaced by some induration of the superficial layers of the skin, with a characteristic dry scaliness which is practically permanent.

Frequently the erythematous dermatitis progresses so that the deeper layers of the skin are infiltrated, and as the inflammatory process subsides, small patches of atrophied skin, white in colour, appear, or there may be scar formation, according to the depth of the inflammatory changes. There/

There is frequently a tendency to the formation of small flat scaly warts, usually oval or circular in shape. In advanced cases, the whole surface of the forearm appears indurated, hard and thickened, giving a tanned leathery appearance. (Plate 16).

In some few instances the scaly warts have been observed to show signs of proliferation of the epithelial layers with more rapid growth. This condition has been described by Volkmann⁽³⁾, Ball⁽⁸⁾, Schurdart⁽⁹⁾, Heidingsfeldt⁽¹⁵⁾, and others, summaries of descriptions being given under Bibliography Section.

These scaly warty nodules are very typical of old-standing dermatitis due to occupation, and must not be confused with ordinary simple callosities and papillomata which are sometimes seen on the hands of workmen, and which are common among ploughmen, bricklayers, etc. When occurring among paraffin¹shed workmen, these, if injured by abrasion or mechanical damage, are apt to become irritated and undergo excessive epithelial proliferation, with subsequent growth in size.

The advanced condition of dermatitis may persist for many years or for a lifetime, with permanent roughness and wartiness/

wartiness of skin and a chronic desquamative process going on. The tendency towards the formation of warts may persist long after workmen have ceased to work in paraffin departments and have not been further exposed to causes of irritation.

The permanency may be illustrated by the case of a workman who was injured fifteen years ago so much that he has never been able to return to work. This man still suffers from a chronic dermatitis, with dryness and scalliness of skin, with a tendency to formation of warts which occasionally assume an excessive degree of proliferation approaching malignancy, necessitating their removal at intervals.

Chronic dermatitis as described above usually co-exists with old-standing papular dermatitis, in which the papules are of the indurated type, being hard and scaly. Thus in an advanced stage, the forearms show pigmented patches, small white areas of atrophied skin, scars, scaly warts and indurated papules. This is well illustrated by plates 24 to 26.

The distribution of erythematous dermatitis is confined solely to parts in contact with paraffin substances. The forearms principally are affected, either in parts (especially over ulnar aspects) or generally.

In advanced cases, the lower thirds or halves of arms are usually also affected. Occasionally the dorsa of feet show the condition to a slight degree, but there has not been seen the same amount of induration, the feet being better protected. The/

The palms of hands may show a slight tendency towards exfoliation of the epidermis, which becomes thickened and fissured, as a result of the dermatitis.

The erythematous dermatitis of paraffin workers differs from other forms of dermatitis venonata, in that there is never any tendency towards moistness of surface. There is never vesiculation or any formation of bullae, the general tendency being to assume a chronic course, and induration is of frequent occurrence. Dryness of the affected parts is the feature of paraffin workers' dermatitis, but an occasional slight excoriation of scar tissue, from injury or climatic conditions, may be seen. While a considerable proportion of the older workmen show evidence of healed, or old-standing dermatitis, the condition has become less evident in recent years, and is practically confined to those who have been paraffin workers for years, the recent employees being free from this type of skin lesion.

7. Epithelioma (Paraffin Workers' Cancer).

Epithelioma, occurring among paraffin and tar workers, was first described by Volkmann (3), and at later dates by others, while cases from Scottish Oil Works were shown as early as 1879 and subsequently. See detailed list in Bibliography Section.

Epithelioma/

Epithelioma as seen among the paraffin workers of the Scottish Oil Industry may be defined as an epithelial growth, followed by ulceration and necrosis of tissue, having its origin in the epithelial layers of a wart or papule. This condition occurs in workmen about or over middle life who have been paraffin workers for long periods. It usually arises from the scaly warts which form as a result of the chronic dermatitis already described, or from an old papule, especially of the indurated type. The warts or papules giving rise to this lesion have as a general rule existed for a number of years in a benign form, until the epithelial covering begins to proliferate more rapidly, with increasing growth of the primary lesion, until the characters of malignancy develop.

In the early stages of the degeneration the naked-eye appearances vary according to the primary condition, so a short outline of the development from a wart and a papule may conveniently be described -

(A) Arising from scaly wart. In the benign condition the wart is somewhat oval or circular, about the size of a sixpence. It is covered by small scales which are readily removable, leaving a somewhat indurated base. The wart does not/

not protrude to any extent above the level of surrounding epidermis. As the epithelium undergoes proliferation, the wart increases in area and also becomes more raised above the level of surrounding skin, until it gradually assumes the size of half-a-crown in area, raised about quarter of an inch or more above the surface, and covered with thick horny scales. On reaching this size, there is a tendency for the formation of fissures, or abrasions of the surface, from which a serous fluid exudes, causing crusting of the surface. The crusts are readily removed by any slight injury, but re-form. This appearance persists for some months, the area gradually increasing until the incrustation and warty covering of the growth eventually slough and disappear, leaving a superficial ulcer, from which sero-sanguineous fluid exudes. Subsequent growth of ulcer in depth and size takes place slowly.

(B) Arising from a papule. An indurated papule has been already described as occurring in old standing erythematous dermatitis. The papule as a rule persists in this benign form for many years. A central necrotic area may form, accompanied by the gradual growth of the primary lesion. As the papule grows in size, the necrotic area may be separated, followed by the healing of the papule. On the other hand, after separation/

separation of the slough, it may grow until it assumes much larger proportions than formerly, the growth having a central ulcer, surrounded by indurated edges. The growth of the ulcer extends peripherally and also in depth, the edges being indurated and undermined, until all trace of elevation of tissue above the level of the surrounding skin disappears, so that a large open ulcer is formed, with a base of red angry-looking granulation tissue, bleeding profusely on the slightest touch. This condition is illustrated by Plate 29. Plate 29A shows what might be termed clinically the transition stage from a simple to a malignant condition. The plate shows a large central horny slough and the formation of an ulcer tending to spread rapidly, and therefore to all clinical appearances an early malignant condition.

When the growth is situated on the scrotum, there is, as a rule, in the ulcerative stages, an overgrowth of epithelial tissue forming large masses, protruding above the surrounding surface, giving the appearance of a cauliflower excrecence, and being very vascular, they bleed profusely. Ultimately the lymphatic glands are involved in this excrecence, so that in the latest stages the whole inguinal region is invaded by a large ulcerating cauliflower-like mass. Plate 31A shows an epithelioma of scrotum recurring after excision of part of scrotum and right testicle for a similar condition. Case No. 41, page 29.

Clinically, the epitheliomatous growth, as occurring in the Scottish Oil Trade, differs in no respect from that generally described in text-books, while microscopically it shows the same proliferation of epithelial cells forming cell-nests, with infiltration of the ~~surrounding and deeper structures~~, as a typical epithelioma.

The/

The malignancy for a long time is not great, a feature which was noted by Longmuir in 1883 (7), in an address describing occurrence of epitheliomata among oilworkers in the pioneer Oil Work of the Scottish Shale Oil Industry. The lymphatic glands do not become involved till a late stage, but this varies according to the situation, the glands being involved earlier when the lesion is situated on the scrotum than when the site is on arm or forearm. The most common situation is on back of hand or on lower third of forearm, but it also occurs on scrotum, and it has been seen on face, at outer and inner angles of eyelids, in which latter case the features of a rodent ulcer are assumed, as illustrated by Plates 30 and 31.

A point of importance in connection with the occurrence of paraffin workers' epithelioma is that, while the various forms of dermatitis and other skin lesions described under headings one to five are only got among the actual workers in or about paraffin departments (crude or refining departments), cases of epithelioma have in the past been more prevalent among workmen in other parts of the various Oil Works, and under conditions in which there may be no actual prolonged contact with, or handling of, oil, in any of the stages from the crude to the/

the semi-refined and ultimate products. It has occurred in retortmen, labourers, and stillmen, none of whom come into such close contact with the products of shale, in the various stages of distillation and refinement. In these men the epitheliomatous growth does not arise from a previously existing condition due to the action of paraffin, such as a papule or wart as already described, but generally begins as a reddish pea-shaped nodule, in which the typical "cell-nests" are present practically from the onset, or on the site of an ordinary simple papillomatous wart or mole, or small cyst. There is the usual epithelial proliferation, accompanied later by the degenerative changes associated with an epitheliomatous growth. The primary lesion increases in size, followed by the usual incrustation, fissuring, and ultimate breaking-down of the growth, forming an ulcer. This ulcer gradually increases in size, shows indurated and undermined edges, and discharges a sero-sanguineous fluid. Ultimately the lymphatic glands are involved. The subsequent progress differs in no way from that of a typical epithelioma, the clinical and pathological appearances of which are well known. The epithelioma which occur in oil workers and labourers, as distinguished from paraffin workers, without any primary condition of dermatitis, are as a rule found among those men such as retortmen, labourers/

labourers, and stillmen, who come into contact with ash, coke dust or other gritty material. The scrotum is most frequently the site of such lesions, this being due to the difficulty of ensuring cleanliness of this region.

The terms "Paraffin Workers' Cancer" and "Paraffin Workers' Epithelioma" have for a considerable time been used in a much wider sense than at first, when the condition was described as due to the contact with paraffin substances. At the present time, it is applied to all forms of cancer arising in connection with occupational conditions, and a more applicable description would be "Occupational Cancer".

In examining the records of Edinburgh Royal Infirmary for the past twenty-two years, numerous cases have been recorded as paraffin cancer among railway workers, dock labourers, masons, chimney sweeps, glassmakers, enginemen, etc., in none of whom was the condition likely to have been due to paraffin.

The Workmen's Compensation Act of 1906, in which paraffin workers' epithelioma was included as a trades disease, was not made applicable to the Scottish Oil Industry till 1920, but since 1914 compensation on the same scale as under that Act has been paid to those affected, ex gratia. There is thus since 1914 a record of cases of this condition.

After/

After a careful search through the records of patients of Edinburgh Royal Infirmary, between January 1st 1900 and December 31st 1921, involving the scrutiny of two hundred and forty thousand admissions to that institution, I have made a complete list of cases that have occurred since 1900, in addition to verifying the lists of cases recorded by the employers. This information, along with my experience over the past twenty-two years, ensures the accuracy of the complete list of cases that have occurred since 1900. I have detailed these under two heads, "Paraffin Workers" and "Oil Workers or Labourers", giving ages, situation of the lesion, and result as far as could be ascertained, with the date of admission to Royal Infirmary.

LIST of CASES of PARAFFIN WORKERS EPITHELIOMA between
JANUARY 1st 1900 and DECEMBER 31st 1921.

In address column:-

A. signifies Addiewell.
 B. " Broxburn.
 N. " Nidiry.
 O. " Oakbank.
 Ph. " Philpstoun.
 Pu. " Pumpherston.
 U. " Uphall.
 W. " West Calder.

(A) Oil Workers and Labourers:-

No.	Init- ials.	Add- ress.	Age Yrs.	Occupation	Admitted to Royal Infy.or reported.	Site of Lesion.	Result.
1	M.R.	A.	55	Labourer	24/1/00	Scrotum	Excised.
2	W.D.	U.	47	Labourer	29/11/00	Scrotum	Excised.
3	M.S.	W.	54	Labourer	30/11/01	Nose	Excised.
4	J.S.	U.	52	Stillman	19/10/03	Scrotum	Excised.
5	P.B.	O.	65	Labourer	8/9/04	Scrotum	Excised.
6	J.C.	A.	39	Labourer	19/9/04	Scrotum	Excised.
7	J.C.	U.	57	Labourer	8/10/04	Auricle	Cured.
8	W.P.	A.	63	Engineman	10/11/04	Nose	Cured.
9	P.A.	B.	60	Labourer	12/6/05	Scrotum	Relieved.
10	H.T.	W.	70	Labourer	27/6/06	Scrotum	Relieved.
11	F.G.	A.	56	Stillman	17/10/07	Scrotum	Died.
12	T.M.	Pu.	37	Labourer	15/6/08	Forearm	Scraped.
13	J.F.	O.	45	Labourer	10/10/08	Scrotum	
14	J.F.	U.	70	Labourer	16/11/08	Scrotum, etc.	Excised.
15	T.P.	A.	73	Ammonia Maker	31/5/09	Scrotum	Excised.
16	A.C.	U.	53	Oil Refiner	31/1/10	Arm	Amputated.
17	J.M.	A.	67	Oil Worker	25/1/10	Scrotum	Excised.
18	P.M.	B.	44	Coal Trimmer	31/5/10	Popliteal Space.	Amputated.
19	P.N.	B.	55	Stillman,	1/1/10	Scrotum	Died.
20	J.F.	N.	41	Retortman	9/11/10	Scrotum	Excised.
21	J.S.	A.	58	Labourer	26/11/10	Lip	Removed.
22	F.O.	N.	79	Labourer	13/6/11	Hand	Relieved.
23	W.D.	U.	73	Oil Refiner	27/6/11	Arm	Scraped.
24	J.R.	U.	76	Labourer	22/8/11	Scrotum	Excised.
25	W.W.	Pu.	66	Labourer	21/8/11	Scrotum	Excised.
26	J.C.	U.	63	Stillman	13/11/11	Face	Excised.

(A) Oil Workers and Labourers (Cont'd):-

No.	Init- ials.	Add- ress.	Age Yrs.	Occupation.	Admitted to Royal Infy. or reported.	Site of Lesion.	Result.
27	P.M.	Ph.	53	Labourer	4/5/12	Scrotum	Excised.
28	A.O.	U.	50	Labourer	22/5/12	Scrotum, (Excised.
						etc.)	
29	T.C.	W.	60	Platelayer	17/4/13	Scrotum	Excised.
30	W.D.	U.	49	Labourer	24/1/14	Hand	Excised.
31	J.M.	B.	60	Oilworker	24/4/14	Scrotum	Excised.
32	F.H.	U.	42	Stillman	14/5/14	Scrotum	Excised.
33	F.S.	Ph.	54	Oilworker	17/8/14	Scrotum	Excised.
34	R.N.	B.	65	Labourer	3/3/15	Hand	Amputated.
35	D.D.	W.	50	Labourer	17/7/15	Anus & (
						Glands.)	Died.
36	W.M.	B.	61	Shale Breaker	23/2/17	Ear and (
						Glands)	Cured.
37	J.P.	U.	53	Oil Refiner	5/11/17	Scrotum	Excised.
38	D.M.	U.	73	Labourer	7/1/18	Hand	Relieved.
39	J.P.	B.	74	Emptying Oil (
				Tanks.)	24/1/18	Scrotum, etc.	Died.
40	J.P.	B.	54	Stillman	26/7/18	Wrist	
41	A.D.	U.	53	Retortman	16/3/18	Scrotum, etc.	Recurrent
42	J.L.	U.	63	Labourer	29/11/18	Jaw	Excised.
43	J.G.	U.	73	Sweating Shed (
				Man.)	2/3/19	Forearm	Cured.
44	H.H.	Ph.	52	Oilworker	24/6/19	Scrotum	Excised.
45	M.G.	A.	39	Labourer	24/5/20	Scrotum	Excised.
46	W.C.	A.	54	Labourer	4/7/21	Scrotum	Excised.

(B) Paraffin Pressmen (Green Shed Workers):-

47	D.M.	U.	52	Paraf. Sheds	30/10/02	Arms	Cured.
48	G.F.	W.	48	" "	9/8/04	Arm Apt'd.	Died.
49	H.R.	U.	55	" "	7/1/09	Scrotum	Died.
50	D.S.	U.	60	" "	16/6/10	Hand	Excised.
51	T.P.	A.	75	" "	20/6/11	Hand	Relieved.
52	A.M.	U.	63	" "	19/12/13	Hand	Amputated.
53	A.G.	U.	44	" "	2/10/11	Elbow	
54	J.S.	U.	63	" "	5/11/11	Face	Recurrent.
55	D.A.	O.	73	" "	June, 1913	Arm Apt'd.	Died.
56	J.W.	B.	53	" "	9/6/15	Scrotum	Died.
57	J.O.	A.	52	" "	1/6/15	Groin	Died.
58	G.M.	A.	52	" "	11/5/16	Neck	Excised.

(B) Paraffin Pressmen (Green Shed Workers) /Cont'd/.

No.	Init- ials.	Add- ress.	Age Yrs.	Occupation.	Admitted to Royal Infy. or reported.	Site of Lesion.	Result.
59	A.M.	U.	45	Paraf. Sheds.	27/7/17	Arm	Amputated.
60	J.J.	A.	77	" "	7/1/18	Ear	Cured.
61	D.A.	A.	64	" "	21/3/19	Hand	I.S.O.A.
62	R.W.	Pu.	68	" "			
				(Engineer)	Oct. 1920	Forearm	Cured.
63	H.M.	Pu.	62	Paraf. Sheds			
				(Engineer)	24/4/18	Scrotum	Cured.
64	R.McL.	A.	61	Paraf. Sheds			Excised
				(Engineer)	7/8/19	Arm	I.S.O.A.
65	A.G.	Pu.	46	Paraf. Sheds	20/1/18	Arm	

In all, sixty-five cases of paraffin epithelioma have occurred during the twenty-two years prior to 31st Decr., 1921, and as far as possible the differentiation between paraffin pressmen, (Green Shed Workers) has been made, though it may be that some of those designated oilworkers and labourers may actually have been paraffin shed workmen.

In the Oil Works comprised under Scottish Oils, Ltd., there have been employed approximately five thousand workmen annually for many years, this number including oilworkers, labourers, retortmen and all forms of labour necessary in the distillation of shale and the refining of its products. It will thus be apparent that the cancer incidence is not high, being approximately one and a half per cent in twenty-two years, or under 0.1% per annum.

This list includes six stillmen or oil boilermen, a point which/

which will be commented on when considering the aetiology. One Sweating Shed man only is included, this being the only instance in which a worker in paraffin refining departments has been so affected.

Nineteen cases have occurred in the same period among those definitely known to have been employed in Green Sheds (Paraffin Sheds or Crude Paraffin Departments) and as already stated, there were approximately two hundred men thus employed annually by Scottish Oils, Ltd., during those years. The incidence of this condition among these workers is thus 0.5% per annum approximately.

The ages of the cases recorded vary from 37 to 79 years.

Three were under forty years of age.

Thirteen were between forty-one and fifty years.

Twenty-six were between fifty-one and sixty years.

Sixteen were between sixty-one and seventy years, and

Ten were between seventy-one and seventy-nine years.

The sites of the epitheliomatous lesions were:-

Scrotum.....	31	47.7%
Arm, forearm and hands.....	21	32.3%
Face.....	4	6.0%
Ear.....	3	4.6%
Nose.....	2	3.0%
Groin.....	1	1.6%
Lip.....	1	1.6%
Anus.....	1	1.6%
Leg.....	1	1.6%

Of the nineteen cases among paraffin shed men, the lesions were/

were most prevalent on arms, forearms and hands thus:-

Hands, forearms and arms.....	12	63%
Face, Neck and Ear,.....	3	16%
Scrotum,.....	3	16%
Groin.....	1	5%

These figures are in accordance with the facts stated that among oil workers, retortmen and labourers the tendency is for the primary lesion to occur on scrotum, being malignant practically from its early stages, while among paraffin shed workmen, as a general rule, the lesion occurs as a degenerative stage of warts or papules, which are most commonly situated on forearms.

Broders (26) Annals of Surgery gives a list of sites of squamous epitheliomata of skin, with percentage frequencies of the points of origin, and a percentage frequency of points of metastasis. These are diagrammatically illustrated. His statistics are based on observation of two hundred and fifty-six cases of epithelioma of skin, and the prevalent sites are described as face, head, neck, and supraclavicular region. Seventy-eight per cent occurred in these regions, and 53.96% of cases occurred in farmers.

The sites of occupational epitheliomata (paraffin cancer) as far as the cases which have occurred in the Scottish Oil Industry during the last twenty-two years are concerned, vary materially from those given for the reasons already stated -

(a)/

(a) The anatomical disposition of skin of scrotum, facilitating the lodgment of dirt and deleterious materials between the rugae, and

(b) the prevalence of warts and primary occupational conditions on arms and forearms.

BIBLIOGRAPHY.

(1). Allen, Harrison, American Journal of Medical Science, 1862, Vol. 43 page 92, describes pustular form of skin disease among workers in kerosene factory. This began as reddish papules, with black spots on summits, maturing in about five days into pustules, then desquamating leaving a pock mark. These were most plentiful on anterior aspect of body. Attributed to poisonous effect of kerosene oil, but doubt was thrown on conclusion that rash was due to oil.

(2). Ogston, Alex., Edinburgh Medical Journal 1871-1872, Vol. 17 page 544, describes eruption of nodules and pimples on hands and arms of paraffin workers. Two types described, Acute consisting of bright red nodules on wrists, arms, feet and legs, and occasionally on neck, palms of hands and soles of feet being free. The leading peculiarities were hard nodules, tender to touch, about size of barley seed, consisting of hair follicle enlarged and dilated, filled with epithelial scales.

No/

No tendency to suppuration, being dry and friable. Chronic type consisted in honeycombed appearance of skin, thickened and inelastic, with densely-packed groups of hair follicles packed with epithelium, with indurated cutis between. In chronic subjects, sleeplessness, loss of weight, foul tongue, etc., due to irritation and pain of skin. Attributed to "blac oil." Two illustrations accompany article, one showing papular dermatitis, the other follicular and indurated dermatitis.

(3). Volkmann : Berlin Klin. Woch. 1874 Mai 18. Three cases of tar-workers' cancer.

Sammlung Klin.Vorträge, 1875, Vol. 1, pages 370-381.

In the latter he describes paraffin workers' dermatitis, exhibiting itself as papules, boils and acneiform eruptions, followed by increase of epidermis formation resulting in flattened warts, with white patches of skin. The skin gets dry and fissured, with hyperplasia of epidermic cells, which develop occasionally into multiple flat warts, some of which develop cancer, the prevalent sites of which are arms and scrotum.

(4) /

(4) Bell, Joseph, Edinburgh Medical Journal, 1876-1877.

Vol. 22, page 135, described two cases of paraffin epitheliomata of scrotum in labourers in oil works, one with glands involved, the other without. Each worker also has "paraffin acne" over arms, one had an exaggerated degree of comedones over arms, hands and legs.

(5) Cameron, Hector, Glasgow Medical Journal, July to December 1879, page 40, describes case of paraffin epithelioma of scrotum from Oil Work at Bathgate.

(6) Tillmanns. Deutsche Zeit f. Chirurg. XlIII 1880 page 519.

(7) Longmuir : Edinburgh Medical Journal, 1883, part 1 page 541. As surgeon to Young's Oil Coy., Bathgate, met with several cases of epithelioma among oil workers and occurring as warty nodules or ulcers. He notes that rapidity of growth is less than scirrhus, encephaloid, melanotic, and colloidal cancers, but resembling these by the same tendency towards infiltration and extension to lymphatic system, inducing death by cachexia. These epitheliomata are described as beginning as irritation causing increase of epithelial cells, forming warts which gradually break down and ulcerate, forming soft crusts, with the ultimate breaking down into open ulcer. He recommends frequent baths (and on his suggestion/

(11) Derville and Guermontprez, Journal des Sciences Medicales de Lille 1892, Vol. IV, describe papillomata in paraffin workers.

(12) Kirk, Robt., B.M.J. 1903, Vol. 2, page 1528, describes occurrence of eczema in paraffin workers, continuation of irritation causing induration and dermatitis, with formation of paraffin "plukes". These plukes are described as small boils, going on to suppuration and sloughing, some gradually forming epitheliomatous ulcers. Forearms stated to be sites of eruptions, but records case of epithelioma of scrotum involving penis and abdominal wall.

(13). Buchanan, George, Glasgow Patholog. and Clinical Socy., 1893, Vol. V, page 165, showed two specimens of paraffin cancer, one removed from ankle and one from arm, both occurring in Purphorston workmen.

(14). Roberts, L. Liverpool Medico-Chirurgical Journal, 1893, Vol. 13, page 40. Folliculitis Paraffinalis in lamp boy on ship, ending as perifolliculitis with hair in centre of each prominence, and formation of brown papules later.

(15). Heidingsfeld, Dr. Journal of Cutaneous Diseases, 1906 Vol. 24, page 513, in article on paraffin injections mentions irritating nature of paraffin on superficial tissues, causing keratosis and epithelial changes.

(16)/

(16). Stelwagon H.W. Diseases of Skin, 1907, page 975.

Workers in petroleum and paraffin products subjects of acne form furuncular and abscess formations.

(17). Ullman, K. Vienna Dermatological Society, 1909,

November 3, demonstration of case of multiple carcinoma of scrotum.

(18). International Congress of Medicine 1913 illustrations of paraffin cancer shown by Drs. Norman Walker and Cranston Low in Museum of Dermatology Section.

(19) Walker, W.H.H. Home Office, Factory Department 1913

Report describes occupational eruptions as papules, due to contact with paraffin scale.

(20) Davis : Journal American Medical Association, 1914,

Vol. 62 No. 22, page 1716, describes paraffin cancer and dermatitis occurring among gasworks tar workers. He illustrates a case showing cauliflower like excrescence on back of right forearm. He states that these also occur among paraffin pressmen, and describes eruptions as "wax boils" gradually forming warts and occasionally epitheliomata.

(21) White, Prosser, Occupation affections of skin 1915,

page 82, petroleum acne, hair follicles filled with dirt and oil, setting up perifolliculitis with infiltration of skin round follicle which may necrose and be separated as slough, also/

also mentions formation of large indolent boils.

(22). White, Boston Medical and Surgical Journal, 1916, Vol. 175, page 43, states that paraffin workers are subject to skin diseases.

(23). Page, G.B. Surgeon R.N. Practitioner 1918, Vol.100, page 451. Petrol Dermatitis.

(24) Ross, H.C. Journal of Clinical Research 1918, October, Vol. 3 No. 4 page 321. Occupational cancer.

(25) Bayet, A. and Slosse, A. Comptes Rendus Académie des Sciences Paris, 1919 , clxviii, pages 701-706.

L'intoxication arsenicale dans les industries de la houille et de ses dérivés (intoxication houillère arsenicale).

(26) Broders. Annals of Surgery, 1921, February, page 141. In article on Squamous-celled epithelioma of skin grades epitheliomatous conditions according to cellular activities. He gives statistics of 256 cases, with the percentage frequencies of points of origin, and also percentages of frequency of points of metastasis. Of his 256 cases, 53.96% occurred among farmers. In 78.1% of the total cases, the points of origin were on head, face and neck.

(27) Semon : Practitioner 1922 Vol.108, pages 259-270. X Rays in Dermatology. Describes X Rays and Radium as best treatment of pitch warts, page 266, also combined use of carbon dioxide snow and radium as best in cases of epitheliomata.

SHORT NOTE ON PATHOLOGY.

(A) PAPULE:-

The papular formation in early stage is due to cellular infiltration into rete Malpighii and to proliferation of the cells of that layer, which becomes thickened. The papillae are enlarged and more vascular than normal. In recent cases there is no thickening of corneous layer, though in more chronic types this becomes thickened from cellular proliferation. Occasionally a central depression is found corresponding to the orifice of a sweat duct.

(B) WART:-

See microphotographs , plates 32, (1), (2), and (3).

The typical appearance of an occupation wart is best described with reference to these microphotographs, taken from a case sent to Royal Infirmary, Edinburgh, as paraffin cancer, but which proved to be a simple horny wart (W.C., an Addiewell workman aet. 48 years). Plate 1 shows under a low power (x 10 diameters) section of skin through a wart like growth with hornification of the squamous epithelium forming adherent layers on the surface. Along the base of growth the epithelium is thin, with loss of the papillae of skin, at the margin the epithelium is extending below the normal level. There is very little reaction in the deeper/

deeper tissues. This is a fairly benign form of acanthoma. It will be noticed that in no sense is it a papillomatous formation, **being mainly a hyperkeratosis.**

Plates 2 and 3 show the margins of the growth (x 30 diameters) with the characters of the hornifying layers on the surface, the dipping down of the epithelium of the rete mucosum, the vascular character in the cutis vera, with slight mononuclear cellular infiltration

(C) SQUAMOUS EPITHELIOMA:-

See plates 33 (1) and (2). These microphotographs are taken from section of an epithelioma occurring in a paraffin shed worker (Case No. 55 on list given on page 29, age 73 years).

Plate 1 shows under a low power (x 50 diameters) extensive infiltration by the epithelial cells into the deeper tissues of the cutis vera, forming the characteristic hornified pearls or cell nests.

Plate 2 shows the same (x 100 diameters).

The arrangement of the basal cells to the connective tissue are seen, also the laminated arrangement of the epithelial pearls.

For the preparation of these sections and microphotographs, I am indebted to the Pathological Department of Edinburgh University.

A SHORT DESCRIPTION OF THE PROCESS OF DISTILLATION OF OIL SHALE, AND SUBSEQUENT TREATMENT OF THE PRODUCTS.

A brief outline of the process of distillation of oil shale and the refining of the products obtained is necessary, so that the prevalence of the occupation dermatoses among the workmen of one department only may be better understood, and also as the various processes will be referred to when discussing the probable cause of these conditions.

Oil shale, which exists in practically unlimited quantities below the lower coal strata in the West and Mid Lothian districts is got by mining in a similar way to that in which coal is obtained. After being broken into small pieces in powerful breaking machines, it is fed into large vertical retorts, which are heated partly by gases obtained from the distillation of shale, the temperature being maintained at approximately 1600 degrees Fahrt. in the lower portion, and 900 degrees Fahrt. in the upper portion of the retort. The oil gases are distilled from the shale in the upper portion, while the nitrogen of the shale is given off at the lower temperature, and in combination with steam passed through the bottom of the retort, part of this nitrogen forms ammonia gas. Another part of the nitrogen combines/

combines to form organic bases known as amines, viz., pyrrol and series, and pyridin and series. The gases are drawn into condensers in which they condense into ammonia liquor and liquid oil, which by their different specific gravities separate and are drawn off into different tanks. The ammoniacal bases (amines) condense along with the liquid oil and are contained in it as organic nitrogen compounds known as the pyrrol and pyridin series. The incondensable gases are used for heating the retorts. After the gases have been distilled from the shale, the refuse, known as spent shale, is discharged from the bottom of the retort into a hutch underneath and conveyed to a waste heap. The ammonia solution is distilled and the gases are treated with sulphuric acid, forming sulphate of ammonia, which need not be considered further as far as this paper is concerned. The condensed oil is known as crude oil. This is delivered into tanks which feed by gravitation into boilers (or stills) where the lightest fractions of oil, ultimately forming naphtha and burning oil, are distilled and condensed. The oil now left is distilled to dryness, leaving a solid residue in the still, known as coke, which being rich in carbon forms a valuable fuel. The gases from this heavy oil condense and/

and form "Crude Distillate". The crude distillate is run into tanks, in which it is first mixed with sulphuric acid and then with caustic soda, removing the tarry contents of the crude oil, at this stage also the nitrogenous compounds are eliminated by the sulphuric acid, and pass off with the acid tar, thus removing these substances from the oil. The acid tar goes back and the acid is recovered, after which the acid is used for combining with the ammonia gases to form sulphate of ammonia. The heavy oil left is technically known as "Green Oil", while a residue of coke is left in the stills, the tar, as liquid fuel, going to heat the stills. The green oil is re-distilled and the distillate cooled by anhydrous ammonia, forming a pasty mixture of oil and crystals of paraffin, which is then pumped into filter presses. Up to this point the workmen never come into intimate contact with oils, tar, or chemical substances, these being confined to the various vessels in which the processes are carried out. In the filter presses some of the oil is separated, leaving semi-solid cakes known as paraffin scale. The separated oil is known as blue oil.

FILTER PRESSES.

These consist of long iron frames about three and a half feet high, with numerous iron plates arranged perpendicularly with/

with filter cloth between, through which the oil is filtered from the scale, the oil running off and the scale being contained in the cloths between the iron plates. The workmen pull the plates apart at intervals, using strong iron hooks for the purpose, and separate the scale from the filter cloths with metal scrapers, the scale dropping into conveyors to be carried to another department for further treatment. (Plate 34 shows the working position of the men, and it will be noticed that the arms are held horizontally so that oil does not trickle over them to a higher level than that at which they are held). The scale is taken to the hydraulic press department, where it is packed in cloths laid on trays, the scale being shovelled into the cloths and levelled with the hands and ulnar aspects of forearms (Plates 35 (1),(2),(3)&(4). The trays are then placed in hydraulic presses, which are vertical frames about eight feet high, with numerous flat shelves, extending to a height of about seven feet. The trays containing the paraffin scale packed in cloths are placed on the shelves of the presses, and as the higher shelves are being filled, the workmen's arms are raised above their heads, so that they are exposed to drops of oil which run along the forearms and lower parts of arms. Plate 36 illustrates the working attitude, and shows how the arms are exposed to drops of

oil/

of oil falling from the trays. It will also be readily seen that the legs and feet get wet with the expressed oil. In working at the filter presses and hydraulic presses, the men have their arms bare as far as the elbows, thus accounting for the prevalence of eruptions in that region. The departments in which these processes are carried out are known as the Crude Paraffin Departments or "Green Sheds".

As the use of filter and hydraulic presses for the separation of scale is not universal throughout the different Works, and as the incidence of occupation eruptions is less in those in which hydraulic presses are not used, the foregoing description is of some importance, as will be stated later.

After the oil has been expressed by hydraulic power, the trays are emptied by the same workmen, the hardened wax being sent to the refining sheds "Sweating Sheds", where the remaining oil is sweated out. During the whole process in the Green Sheds, therefore, the workmen are daily for long periods in contact with unrefined oily paraffin, the bare forearms being most exposed and the clothing getting wet with drops and splashes of oil.

In the refining sheds the paraffin scale is melted and subjected to steam heat in large flat trays, the remaining oil being/

being sweated out, leaving the wax in a refined condition ready for commercial purposes, after a final filtering. The workmen in the sweating sheds do not come into the same close contact with the paraffin, with the result that they are practically free from occupational eruptions.

The blue oil which is separated in the green sheds is re-treated, and again cooled to extract the last trace of wax, going through the same process, as described, a second time. The subsequent treatment of the oil, dividing it into the various grades of lubricating oil, need not be considered here, as in no other stage of the entire process, from beginning to end, other than that more fully described in connection with the green shed departments, are the workmen affected with any of the typical papular, pustular, or erythematous eruptions.

A diagram of the entire process of manufacture of sulphate of ammonia, mineral oils, and paraffin wax from oil shale is appended, with a chart and explanatory note referring specially to the processes through which the heavy oil and paraffin pass to be made into refined products.

Diagram illustrating the Method of Manufacture of Mineral Oils, Paraffin Wax and Sulphate of Ammonia from Oil Shale.
The names of Finished Products are underlined.

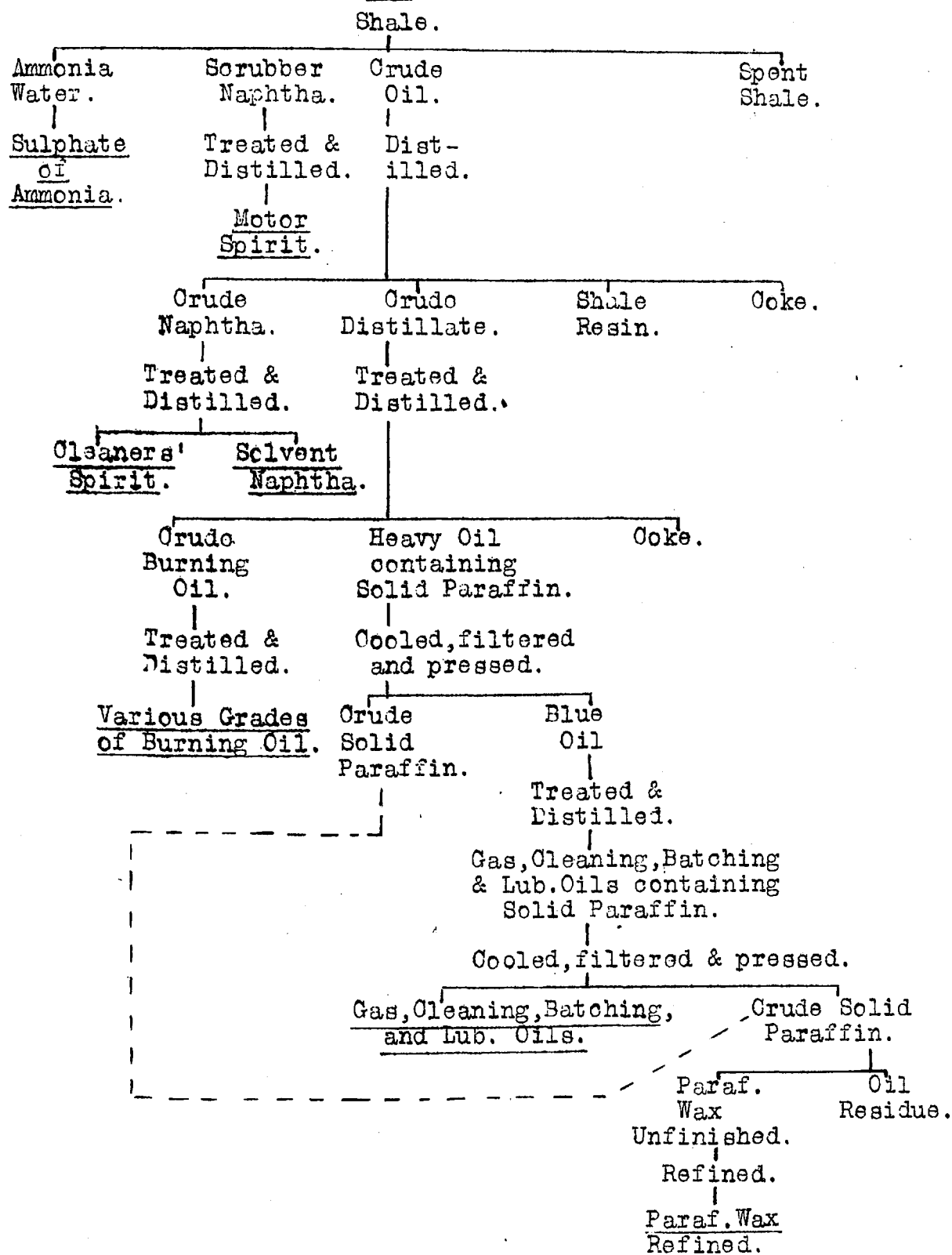
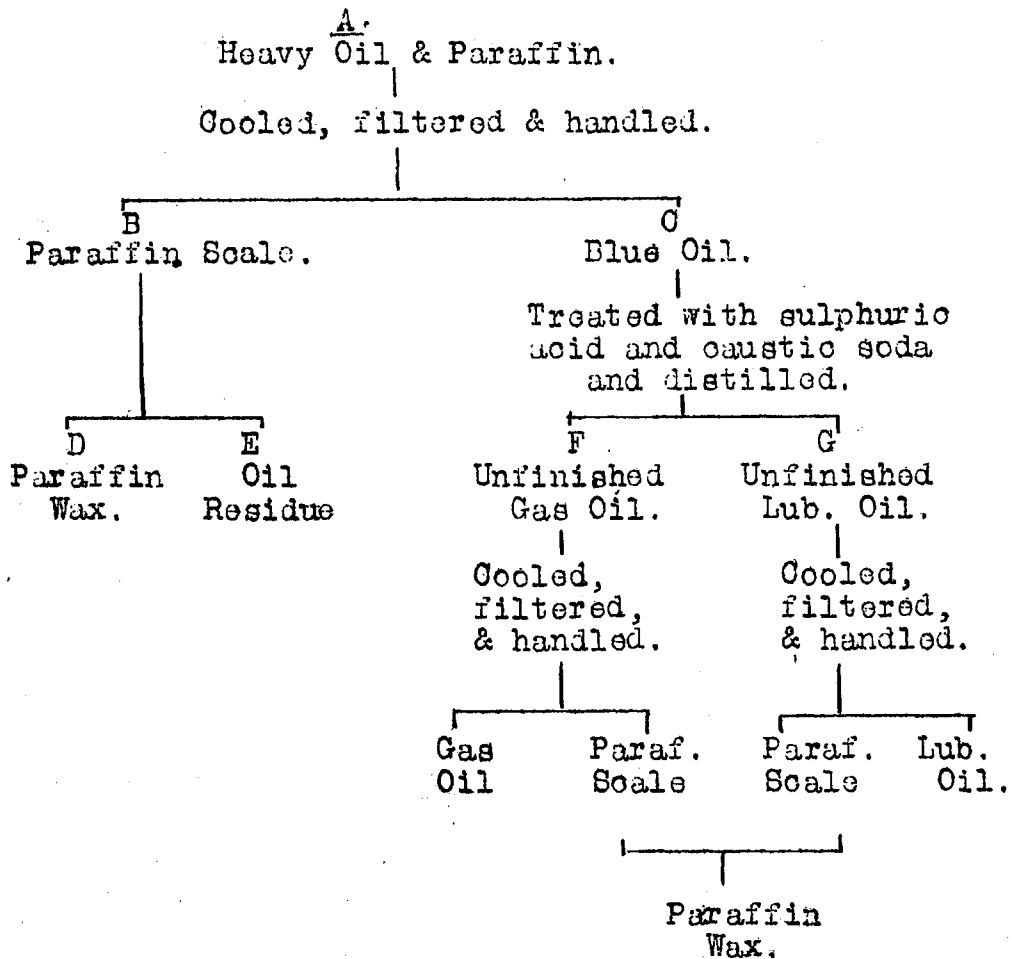


Chart of Process through which the Heavy Oil and Paraffin fraction from Crude Shale oil passes to be made into Refined Products with special reference to the manufacture and handling of Paraffin Scale.



Explanatory Note of Chart of Process, using the letters shown on Chart to denote the Products.

Fraction A is cooled to a low temperature, which causes the Paraffin Scale B to separate from the oil. After being cooled, it is pumped through filters, which retain the scale, and the oil C drains away to a receiving vessel.

B - From the filters B goes to the hydraulic press room where the workmen pack it in filter cloth ready for the hydraulic presses. It is put into the presses and subjected to a high pressure, when more of the oil C drains away. B is then taken from the hydraulic presses and conveyed to a melting vessel, from which it goes to be refined into paraffin wax D.

Blue Oil C is taken, treated and distilled into the fractions shown on chart, and the two fractions to be noted are F and G, which are taken through exactly the same process as A to extract the remaining scale from them.

This description shows the scale which the men in question handle, and gives the products derived therefrom, and also the oils which the men may come into contact with, when working the scale.

THE EFFECTS on ANIMALS of the APPLICATION of SHALE OILS.

In September 1921, samples of the oils with which the paraffin workers come most into contact were sent to the Cancer Hospital Research Institute, Fulham Road, London, to ascertain the results of their application to the skins of mice. The investigations have been carried out by the Pathologist, Dr. Archibald Leitch, and to him I am indebted for the information which is here given.

The experiments have been carried out with green oil (heavy oil and paraffin) and with blue oil. Reference may be made to the chart on page 49 and the explanatory note on page 50. The Green Oil is called fraction A, the Blue Oil is called fraction C. This latter is the result after the extraction of the greater proportion of the paraffin scale.

A spot of oil was put on the back of each mouse three times a week, and after a few applications the hair fell out, or was pulled out by the animals themselves, so that as the oil spread large bald areas were got, giving the mice the appearance of a French poodle. Generally the skin remained smooth and glossy, but sometimes a scurfy condition resulted. The earliest appearance of a papillomatous condition was seen on the 83rd day, the tumour being about the size of a hemp seed. Others appeared on the 87th day and so on, at later intervals. These are shown on the accompanying photographs, and a short description of the progress on each mouse follows.

(1). Treatment with Green Oil, Fraction A:-

Mouse 2. Box 2. Oil begun on September 22nd 1921.
 First sign of wart.....December 29th 1921, 98 days.
 4 small discrete warts.....January 11th 1922, 111 days.
 5 ditto.....January 17th - date of photograph.
 6 ditto.....January 27th - Photograph shows one
 only distinctly.

Mouse 2. Box 5. Oil begun September 22nd 1921.
 2 minute warts.....December 18th 1921, 87 days.
 Several warts.....January 17th 1922 117 " photo.
 6 or 7 warts.....February 9th 1922, Photograph.
 Progress.....February 16th 1922, Photo. Feb. 20th,
 also same date photo back view.
 More warts on other side, March 13th 1922. Photo March 1st.

Mouse 1. Box Va. Oil begun September 22nd 1921.
 A small wart behind
 right ear.....December 29th 1921, 98 days.
 5 discrete papillomata.....January 17th 1922.
 Increase, date of photo.....February 9th 1922.
 Died.....February 10th 1922.

Mouse 2. Box Va. Oil begun 22nd September, 1921.
 Wart appearing.....December 29th 1921 98 days.
 2 small warts.....January 11th 1922.
 Several warts.....February 9th 1922 Photograph.
 More warts.....February 16th 1922
 Died.....March 9th, 1922 Photograph on March
 1st.

Mouse 3. Box Va. Oil begun September 22nd, 1921.
 Appearance of minute
 wart.....January 11th 1922. 111 days.
 January 18th 1922 progress. Photograph.
 3 Warts on dorsal
 mid line.....January 27th 1922.
 More appearing.....February 9th 1922 Photograph.
 Progress, 2 anterior
 coalescing.....February 16th 1922, Photograph on
 March 1st.

Mouse 5. Box Va. Oil begun September 22nd 1921.
 Small papilloma.January 11th 1922 111 days.
 Photograph.....February 9th 1922.
 Slow progress.....February 16th 1922.
 Died.....March 4th 1922.

See Plates 37, 38 and 39.

(2) Treatment with Blue Oil. Fraction C.

The first two photographs show side and back views of papilloma
83 days after beginning treatment with blue oil.

Mouse 1. Box 1. Oil begun September 22nd 1921.
3 minute warts noticed...December 29th 1921, 98 days.
Good progress.....January 17th 1922.
Stationary.....January 27th 1922.
Only one good wart.....February 9th 1922.
Photograph.....February 11th 1922.
Original wart flattening,
and another appearing...February 16th 1922. Photo March 1st.

Mouse 2. Box 2. Oil begun September 22nd 1921.
Wart.....December 29th 1921. 98 days.
2 warts.....January 11th 1922
2 adjacent horns, much
scaliness.....January 27th 1922.
Horns separated by narrow
cleft, with small wart.
in front of them.....February 9th 1922 Photograph on March
1st.
Still separating & grow-
-ing.....February 16th 1922.
Progress.....March 13th 1922

Mouse 3. Box 2. Oil begun September 22nd 1921.
Minute wart.....December 29th 1921 98 days.
Wart size of split pea...January 11th 1922.
Another close beside it..January 17th 1922. Photo. January 18th.
Progressing.....January 27th 1922.
Good flat wart, and
another on right flank..February 9th 1922. Photo Feb. 11th.
Progress.....February 16th 1922
Died.....March 5th 1922.

Mouse 1. Box 2a. Oil begun 22nd September, 1921.
Wart commencing.....January 11th 1922. 111 days.
Long thin horn.....January 27th 1922.
Still long and thin,
progressing.....
also flat wart in front..February 9th 1922.
Photograph.....February 12th 1922.
Died.....February 13th 1922.

See Plates 40 and 41.

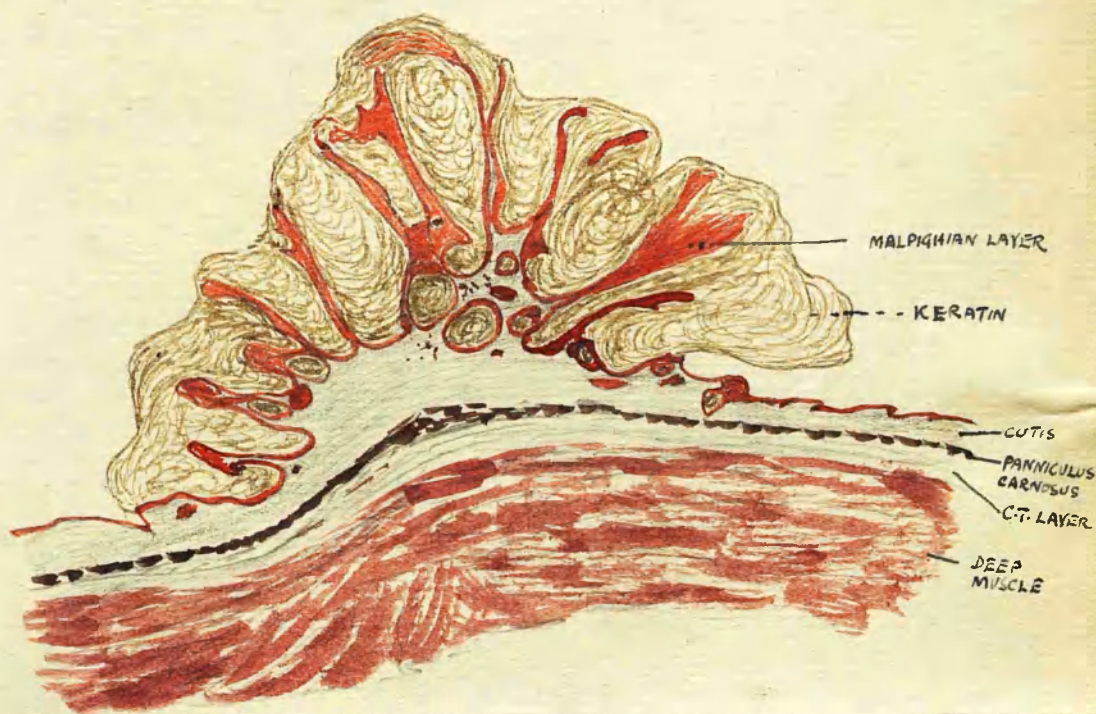
mata
ser
 From the foregoing descriptions it will be seen that the papillotama appeared consistently in about the same periods, the variation being from 83 to 111 days, the greater number being first apparent about the 90th day. At the time of writing, none of the papillotama showed any signs of becoming malignant, all being simple warts on histological examination. The mortality among the mice was rather high, possibly on account of their licking the oil off and so being poisoned.

These results prove that the conditions described are due to contact with the oils, and that the appearance of the occupation dermatoses among the paraffin shed workmen is due to the oily constituents of the paraffin scale, both as green oil, before its extraction, and as blue oil, after most of the paraffin has been extracted. This is in complete accordance with experience among the different groups of workmen, those handling the refined wax being unaffected, those refining the paraffin scale, which still contains some oil, being affected to a slight extent only, while those handling the oily paraffin scale and the oils from which it is extracted being most affected.

Other compounds got from the disintegration of shale oils are in the course of trial, with a view of determining, if possible, the actual substance responsible for the paraffin workers' lesions, but of necessity a very considerable time must elapse before positive or negative results are obtained.

NOTE on PATHOLOGY of NEOPLASM produced on MOUSE by SHALE OIL "A" (HEAVY OIL & PARAFFIN).

The tumour was first noticed on the 29th Decr., 1921, fourteen weeks after beginning oil treatment on the 22nd Sept. previously, the mouse died on 9th January, 1922, and the tumour therefore was eleven days old.



HISTOLOGICAL EXAMINATION:-

There are two papillomata raised from the surface. The adjacent epithelium is somewhat irregular, showing loss of hair and degeneration (complete) of hair follicles, and here and there irregular hyperplasias. Many of the blood vessels in/

in the corium are dilated, but there are no signs of chronic inflammation.

The papilloma here drawn shows upward prolongations of the rete Malpighii and basal cells appearing as dendritic processes joined together and capped by an excessive corneal proliferation which constitutes the bulk of the tumour. In many of these upward prolongations of epithelium, there is a central core of loose vascular connective tissues: some are solid epithelium: in both cases there are cell nests in the stalks and cell nests are found at the bases of the processes. These do not penetrate deep into the corium, and are all directly connected with the overlying epithelium. The brown-coloured layer underneath represents the panniculus carnosus, beneath which again is a layer of connective tissue, and still further down the deep muscles.

The two following projection drawings, kindly supplied to me by Dr. Leitch, are made from microphotographs of tumours on mice.

Projection Drawing "A", Mouse 1, Box 5A, Shale Oil "A":-

Painted on the back three times a week since 22nd
 Septr.
 29th Decr. a small papilloma seen behind right ear (14 weeks)
 11th Jan. slight progress with eczematous condition of
 skin.
 17th Jan. several small papillomata.
 27th Jan. five papillomata in all.
 9th Feb. seven good warts.
 10th Feb. died and partly eaten by other mice in box.

The section shows a papilloma which was pedunculated $\frac{1}{4}$ " wide and a little more in height. Beside it is a smaller wart. The base of the larger wart shows considerable dilatation of the blood vessels, but very little signs of chronic inflammation. The stalks are very vascular, clothed with thickened epithelium, and bound together with excessive keratin formation. The panniculus carnosus (marked with interrupted line) is not encroached upon. There is no epithelial downgrowth. The adjacent skin is somewhat irregular and thickened. (A papilloma on the verge of malignancy).

Projection Drawing "A", Mouse 1. Box 5A, Shale Oil "A".



Projection Drawing "B", Mouse treated with Shale Oil "A":-

Experiments started on 22nd Septr., oil painted on back of mouse three times a week.

Beyond the epilation nothing was evident in the skin in the way of lesion until 9th February when a minute examination of the skin revealed a small part where the epithelium seemed to be slightly hypertrophied. The mouse died on 16th February (21 weeks) and sections were taken through the minute plaque.

Histological Examination:-

The drawing is a tracing from the projection and all nuclei shown are faithful in position and numbers. The epithelium is irregular, and at most places considerably thickened. Some cast off keratin is seen on the surface, but the keratin formation is not excessive. There are projections of epithelium, usually showing central keratinisation, below the normal skin level, but these may not be regarded as malignant. In all cases the basal layer is clearly defined. There is an unusual amount of round cell and plasma cell infiltration of the corium, especially about the middle third - evidences of chronic inflammation. The very bottom of the drawing shows a portion of the panniculus carnosus. The appearances here may be taken as the earliest evident signs of reaction to the irritant, though in most cases signs of chronic inflammation are very sparse.

Projection Drawing "B", Mouse treated with Shale Oil "A".



purely distinct from the surface, but in the later stages
(six months or so) some show increased growth with the
typical epithelial cells approaching the level of the
papillary surface. In one case a small mass
projected. So far no other malignant tumors (definitely
malignant) have been observed. There is only one mouse
left out of the group treated with Shale Oil "A".

Summary of Experiments with the various Shale Oils on Mice:-

After the first or second application of the shale oils, a considerable area of the mouse becomes epilated and generally remains permanently bald, though re-growth of hair occurs in some after a month or so, but this again falls out and remains permanently epilated. Possibly it is pulled out by the animals as the oil may be irritating. The death rate is high because the animals lick the oil off, and it seems to be toxic. Sections of skin in mice that die early show destruction of hair follicles only. The skin in most mice is smooth and glistening, though in some it takes on a rough eczematous condition for a time. Towards the end of the third month of treatment, minute warts begin to appear, and gradually all the animals show warts, though some may give no signs of them for six or even seven months. The warts increase in size, are upstanding and cornified and easily pulled off. They are frequently multiple, but do not all increase at the same rate. A few disappear spontaneously leaving no evident cicatrix. At first the warts are purely upgrowths from the surface, but in the later stages (six months or so) some show downward growth with the atypical epithelial cells approaching the level of the panniculus carnosus. In one case a sarcoma was produced. So far no other malignant tumours (definitely malignant) have yet appeared. There is only one mouse alive now out of one hundred painted with Shale Oil "A", and/

and six out of fifty painted with Shale Oil "C". There is nothing to choose between these two oils (Heavy Oil and Paraffin, and Blue Oil) as far as tumour reactions are concerned. Lately evidences have been got of tumours starting in mice treated with Shale Oil "F" and Shale Oil "G" - see chart on page 49 and explanatory note on page 50.

ETIOLOGY : EXCITING CAUSE.

Having described the eruptions, their sites, the occurrence of the various forms of dermatitis only among those who handle paraffin scale in its moist oily state, and the processes of separation of the scale from the oil, it is certain that the exciting cause is contact with the oily paraffin scale. This has been known for a considerable time, and it has hitherto been believed that the scale itself was the cause of the dermatitis (H.M. Factory Department Reports 1913). Recent experiments with animals, however, have clearly shown that the actual cause is the oil, before and after separation of the scale, and that the scale itself is not the cause of the dermatitis. These experiments have been described in detail, as they are of considerable importance in determining the causative factor. While the exciting cause has been found to be the oils, both green oil (heavy oil and paraffin) and blue oil (after extraction of scale), the actual constituent of these responsible has not yet been determined. Various theories have been advanced, each being a more or less feasible solution of the probable cause, yet, so far, no one has been definitely substantiated with any degree of certainty

(1). That nitrogenous compounds may be the exciting cause.

H.C. Ross, in paper on Occupational Cancer, Journal of Clinical Research, Vol. 3 No. 4 October 1918, page 321, contributes valuable help on the origin of occupational cancer. In/

In considering the question of chemical or mechanical injury, he points out that the incidence of cancer is most where there is no mechanical injury, and summarises thus:-

<u>Mechanical Injury.</u>	<u>Commodity.</u>	<u>Cancer Incidence.</u>
Greatest,	Coal Dust,	Nil.
Considerable,	Blast Furnace Pitch,	Nil.
Only little, as it softens,	Gas Tar Pitch,	Considerable.
Practically Nil,	Tar,	Several cases, but less than pitch.
Nil,	Soot,	Greatest incidence of all.

He further points out that, with the exception of arsenic, all the commodities active in the production of cancer are the result of decomposition in past ages, and draws an analogy in the uses of nitrogenous compounds by gardeners in stimulating cell growth and proliferation, and coming to the conclusion that organic nitrogenous substances may be the chemical substances responsible for the occurrence of occupational cancer. It has been found that watery extracts of dead tissues induce division in lymphocytes and epithelial cells, the active agents in these solutions being nitrogenous substances. To these he gives the name "Auxetic" meaning "excitor", and some nitrogenous bodies such as creatin, xanthin and tyrosin have been isolated from these solutions. He found that other substances, to which the term "Kinetic" has been applied, cause cell movement, and that the/

the kinetics augment the action of Auxetics considerably.

Auxetics and Kinetics have been found in solutions of soot and gas-works pitch, kinetics only in blast furnace pitch, but no auxetics have been found in paraffin scale or lubricating oils as far as products of the Scottish Oil Industry are concerned.

In these latter he found kinetics.

I have given the results of this paper in some detail, as while no definite compound has been named as the cause of occupational cancer, yet a definite working basis has been assumed, as an aid to further investigation.

In criticism of this paper, as far as the paraffin workers of the Scottish Oil Industry are concerned, it is true that mechanical injury is practically nil (other than from handling products at a low temperature), the incidence of dermatoses is high, but the cancer incidence is not high. I have shown in some detail the elimination of the nitrogenous compounds (amines) at stages before the material is handled by the workmen, so that these compounds may practically be dismissed from further consideration as accounting for the production of paraffin dermatoses, and indeed it may be argued further, that, where nitrogenous compounds are present in the most concentrated degree, that is, in the acid which is used for treating the ammonia, in the manufacture of sulphate of ammonia, no dermatoses occur, though the workmen are daily engaged in close contact with the acid and/

and ammonia products in the various processes of refining the unfinished products, though on the basis of Ross's work, they ought to be present, seems to show that this is still in the stage of hypothesis, and that the terms Auxetics and Kinetics can only be looked on at present as abstract terms, and cannot be regarded so far as furnishing definite evidence of any particular chemical compound as the cause of paraffin dermatoses, though further work may throw more light on the question.

(2) Arsenic as a cause of Paraffin Dermatoses.

For a long time arsenic has been recognised as of importance in the production of skin eruptions, which may be classified under the term "dermatitis venenata". These eruptions usually take the form of erythemata, papular, or vesicular eruptions, with, in the more chronic types, the formation of flat warts and pigmentation, which have been known to undergo proliferation with the subsequent formation of epitheliomata. These eruptions have been stated to follow the prolonged ingestion of arsenic, and occasionally the prolonged outward application of arsenical preparations. In a paper on "Arsenic Intoxication in the Industries of Coal and its derivatives", Dr. Bayet, of Paris, classifies a group of symptoms called "pitch diseases" among workers in a briquette factory. He states that the symptoms showed a striking analogy to arsenical conditions.

The/

The eruptions are described as (1) pigmentation, (2) inflammatory and atrophic changes in skin, (3) thickening of skin, notably on scrotum, and (4) cutaneous cancer. He demonstrates from analytical evidence the presence of arsenic in the pitch, in the dust floating about factory, in the urine of the workers, and in the blood of the majority of them. He concluded that the symptoms were due to arsenical poisoning. He further states that various classes of industry may be considered as in the same category as briquette factories, and enumerates chimney sweeps, tar workers, paraffin workers, railway workers who use tar, and those engaged in making tar paper. He affirms that the eruptions prevalent among these workers are identical with "pitch disease" and that therefore they are due to arsenical poisoning. As far as the paraffin workers of this industry are involved, it may be said that it is quite true that arsenic, being one of the most widely distributed of the elements, is found in the raw material, oil shale, but only to an infinitesimal extent. It is also true that the dermatoses have some similarity to arsenic conditions, to some extent in the acute state, but showing more resemblance to arsenical conditions in the chronic types, but nevertheless it can be said with certainty that the paraffin workers dermatoses are not due to arsenical poisoning. On analysis of an average sample of oil shale, it has been found that arsenic is present to the extent of .00056%
by/

by weight, or .0392 grains per pound, and that in the blue oil, which the workmen handle, it is present to the extent of .000015%. These are such infinitesimal quantities that the actual influence of the arsenic present may be considered as of no importance. As the process of manufacture of the finished products of shale involves repeated distillations, and frequent treatment with acid and soda, it is certain that any arsenic, if present, is eliminated, either lodging in the retort flues (in which it has never been traced), or by the treatment of the ammonia with sulphuric acid, during which sulphide of arsenic is separated and removed. The subsequent treatment of the crude oil by the same acid again de-arsenicates the oil, so that its presence in subsequent stages is, for all practical purposes, impossible. On the other hand no appearance of skin eruptions occurs in the crude oil department, in which they might be expected to appear, if due to arsenic intoxication.

(3). Light in the form of radio-active substances as cause of Paraffin Dermatoses.

The influence of light and actinic rays are well known as the cause of epidermic hyperplasia. In the tropics, conditions known as solar keratoses are found, due to the heat and high actinic power of the sun's rays. These keratoses, as the name implies, consist of thickenings of the epidermis, forming flat warts, which frequently show epithelial proliferation to a considerable extent, and are occasionally followed by the formation of epitheliomata/

epitheliomata. The well known X-Ray dermatitis, in which there are at first inflammatory changes, followed by induration and destruction of skin tissue, generally to a much more extreme degree than seen in paraffin dermatitis, may also be given as an example of the influence of light rays on the skin tissues. Warts and dermatitis have already been described as occurring among paraffin workers, and it is also true that the clinical and pathological appearances of these conditions are to some extent similar to those due to actinic rays of sun and to X-Rays, but they never occur to such an extreme degree as that produced by X-Rays. There is never vesiculation or deep-seated ulceration, other than that in advanced stages of epitheliomatous degeneration, there is never pain so frequently associated with burns from X-Rays. It is most improbable that a radio-active substance is the determining factor in the causation of the various forms of paraffin dermatoses described, as these would be much more widely distributed, and it might be expected that many of those coming into contact with the various grades of oil, refined wax, burning oils and other final products would also be affected, all these products being hydrocarbons from a common source.

Organic sulphur compounds as a probable cause.

The presence of sulphur, in the form of organic sulphides, is constant in oil shale, in the crude and semi-refined products, and to some extent in the finished products as well. These exist/

exist as Thio-alcohols, or Mercaptans, so called from their affinity for mercury, forming insoluble mercury salts. They are colourless, and have a smell like garlic. They persist throughout the various distillations and treatments with sulphuric acid and soda, and so far their total elimination has not been found possible. Their appearance is most apparent after each distillation, the characteristic odour being got at the worm-ends of the stills (the ends of the coils in which the gases condense, forming the various grades of oil). The formula of Mercaptan is $C_2H_6S = C_2H_5SH$. The hydrogen gets replaced by some metal, usually mercury, when compounds known as Mercaptides are formed, which however are obscure. These, however, have recently been definitely isolated as liquid mercaptides, with the characteristic odour of sulphur compounds.

A point of interest is that among oilworkers generally epitheliomata have been got more frequently after each process of distillation than after the various processes in which the oils are treated with acid and soda. Several cases have occurred among stillmen, without previous dermatitis. These men work about the worm-ends of stills taking dips (samples) of the distillate at frequent intervals, thus being in contact with the oils in progressive stages of the refining processes. At these worm-ends there is always the characteristic odour of the/

the sulphur compounds, showing their presence after distillation. Sulphur compounds are removed during the processes of treating oils with acid and soda, and on re-distillation of oils, these again form from the residual sulphur, which is present to some extent throughout the different processes until the final products are reached.

The heavy^{oil} and paraffin, with which the paraffin shed workers come so much into contact, is also a distillate and therefore containing those compounds.

Similar types of lesions are found among pitch and tar workers, these also being engaged in the distillation of hydrocarbons, with a considerable proportion of sulphur impurities.

I have not been able to find any recorded case of skin eruption attributed to sulphur or its compounds, but nevertheless the possibility of paraffin dermatitis being due to these compounds must not be overlooked. While, so far, there is no direct evidence of this, I am of opinion that the hypothesis of sulphur compounds being the exciting cause is more probable than any theory at present advanced.

Experiments are in process which have a bearing on this subject, but some time must elapse before any result is obtained.

Having given in detail the various theories advanced as probable causes of the dermatoses found in the paraffin workers of the Scottish Oil Industry, no one of which has been accepted as conclusive/

conclusive, the position may be summarised thus:-

The various forms of dermatitis, whether papular, pustular, or erythematous, found among paraffin workers are due to direct contact with some chemical substance, which, by the formation of warts and indurated growths, acts as a predisposing cause of epithelioma, and that the determining factor, or exciting cause of epitheliomatous degeneration is, in common with all other forms of cancer, unknown.

AETIOLOGY - PREDISPOSING CAUSES.

Age:-

The influence of age as a predisposing cause of the erythematous, pustular and papular eruptions is slight. While the few cases of primary pustular dermatitis observed have occurred in youths beginning work in the paraffin sheds, the incidence of the papular type is approximately equal in those under and those over forty years of age, and conversely, of those free from eruptions, taking the same age as the dividing line, the numbers are again approximately equal.

As a general rule, the early or slight forms of erythematous dermatitis are not seen in men under thirty-five years of age, the more indurated forms being apparent from forty years of age upwards. This, however, only holds good if those affected have been employed continuously in paraffin sheds for some years, so that/

that length of service is really the determining factor in the causation of this condition.

Age has a distinct influence on the occurrence of epitheliomatous lesions, these practically never being seen in men under forty years of age, and generally appearing at more advanced ages than this, a fact in keeping with cancerous conditions generally. It will be seen from the list of cases on pages 28, 29 and 30 that these lesions occur only in middle life.

Length of Service in Paraffin Departments.

Length of service is of considerable importance in determining the nature of the skin lesions. As previously stated, the primary form of pustular dermatitis appears after a few weeks' work in the paraffin sheds. The papular types likewise appear after a few weeks' service in these departments, though papules disappear and others form throughout the duration of continuous employment as paraffin workers. An opportunity of verifying the early appearance of papules occurred after cessation of work for a period of six months recently. A few weeks after the men ceased work in paraffin sheds all recent papules disappeared, to re-appear a few weeks after resuming work, the earliest manifestations being got in from twelve to fourteen days. The presence and degree of erythematous dermatitis are in proportion to the length of service. The less extensive and less indurated conditions begin to appear after about seven or/

or eight years, while the more indurated and more chronic types are only seen on men who have completed many years of service, the worst cases having been continuously thus employed for terms varying from twenty to forty years.

As might be expected, epitheliomatous conditions are only found after long terms of service, these usually arising from chronic warts or papules, which may exist in a benign state for many years before undergoing epitheliomatous changes. Those affected during recent years have been paraffin workers for periods from thirty to forty years.

Idiosyncrasy and Predisposition.

Accumulated evidence tends to show that some workmen have a greater tendency to be affected than others, the working conditions otherwise being the same. It might be expected that most or all of those working among the semi-refined material should show some form of occupation eruption, but this is not the case. It has already been suggested that there may be an idiosyncrasy on the parts of a few youths towards the action of semi-refined oils, by their having pustular eruptions soon after beginning work, while the majority escape. Likewise the fact, that, only approximately half of those working among the same materials and under the same working conditions suffer, has never been otherwise explained, and the only reason that can be advanced is that there is greater tolerance on the parts of some than of others. Illustrations of similar idiosyncrasies are/

are readily got in connection with plant life, e.g., the well known effects of poison ivy, primula obconica, nettle and others. In addition, with reference to the occasional occurrence of epitheliomata, the actual incidence is low, yet many men are affected with warts due to occupation, which form strong predisposing factors, and, on the other hand, some of those who have suffered from this condition have ~~been~~ affected several different times and in different situations with primary epitheliomatous growths. An instance may be given. One man had an epithelioma removed from scrotum in 1903, without recurrence, another from lower eyelid in 1911, which has since recurred, and a primary growth from right cheek in 1921. In the list of cases given, several names appear ~~more~~ than once, each occasion being some years apart. Plate // shows recurrence of growth in eyelid of man referred to. I have had occasionally under observation large warty growths with central necrosis, similar to those illustrated by plates 19 and 20, and suggestive of the stage immediately preceding malignancy, which instead of undergoing epitheliomatous degeneration have healed after separation of necrosed area. Cases such as those might be considered as only lacking in the personal factor, which must have a certain amount of influence in determining the development of a benign into a malignant condition. This is also termed the "Progressive Element".

These facts are suggestive that an idiosyncrasy may exist towards the action of paraffin substances, and that the personal/

personal element is a factor of some importance in the further development of warts and papules into epitheliomata.

The following table shows clearly the proportion of those unaffected at four recent examinations since 1919:-

<u>Green Shed</u> <u>Men.</u> <u>(Crude Dept.)</u>	<u>White Shed</u> <u>Men.</u> <u>(Refining Dept.)</u>	<u>Green & White</u> <u>Shed Men.</u>
Feb. 1919, 28.7%	71.2%	42.0%
Aug. 1919, 29.5%	83.0%	44.5%
Mar. 1921, 35.4%	94.3%	49.3%
Aug. 1921, 39.1%	91.4%	47.9%

It will therefore be seen that a considerable proportion of men escape, many of whom have been paraffin workers for long periods. On the other hand, a number of those having eruptions have been paraffin workers for short periods only. An illustration may be given to show how under similar circumstances some are affected and some escape. Following a cessation of work for six months, an examination was made of a group of paraffin workers six weeks after work was resumed. In one work, of those examined, eighteen men had been paraffin workers for less than two years, nine of these were free from eruptions and these were free on former examinations, nine were affected to a greater or less extent, and these, with one exception, had some form of paraffin eruption at previous examinations, which had disappeared with the stoppage of work, and re-appeared soon after beginning work in the green paraffin sheds.

It has been noted that men with fair complexions, or reddish hair, and freckled skins, show more reaction to the irritant than dark complexioned/

complexioned workmen, being more extensively affected, and to a greater degree than the latter. A similar fact has been noted in connection with tropical skin conditions due to solar rays. This, however, in no way explains the differences referred to, so that the most reasonable explanation may be that a certain degree of idiosyncrasy may exist, causing a greater intolerance on the part of some than of others. The practical importance of this is, that on a workman showing an early or excessive tendency towards appearance of occupational eruptions, might with advantage be removed to a different department, and so, by a process of selection, only those showing partial or complete tolerance should be employed in paraffin departments, which would presumably be followed by the general amelioration in extent and degree of paraffin dermatoses.

The presence of other skin diseases.

The presence of several of the more common skin diseases has been noted. These comprise acne vulgaris, psoriasis, eczema (chronic), and scabies. It may be said generally that, where acne vulgaris is present, the papules have a tendency to assume the papulo-pustular type, possibly from staphylo- or streptococcal infection. The actual acne condition does not appear to be aggravated by contact with the oily material, several cases/

cases kept under observation undergoing gradual improvement. Psoriasis has been seen accompanied by a diffuse non-indurated form of erythematous dermatitis, while eczema of a chronic type has been found to be associated with some induration of the superficial layers of epidermis. Scabies exists without modification by contact with oily paraffin, and responds to the usual method of treatment without after-effects.

Want of Cleanliness.

The importance of cleanliness was emphasized by Longmuir⁽⁷⁾ in 1883, and on his suggestion, baths were erected for paraffin workers in Young's Oil Works at Bathgate. These, however, were never used.

In recent years, very considerable attention has been paid to the importance of cleanliness, and facilities have been freely given for this purpose, as will be described later. Notwithstanding strict attention in this respect, it cannot be said that the incidence of early, or papular eruptions has been more than slightly diminished, but on the other hand, there has been a marked diminution in the frequency of the more chronic types, such as erythematous dermatitis, so much so, that recent erythematous dermatitis is now uncommon, while the more chronic and oldstanding conditions may be said to be more prevalent among those whose habits of cleanliness in the past might have been improved; that is, the influence of greater attention to/

to cleanliness has been followed by a lessening of this form of occupational eruption.

It may be said, in common with the generally accepted opinion, that epitheliomata, especially when occurring on the scrotum, in most instances may be attributed to lack of cleanliness, as the difficulty in this respect, as far as the scrotum is concerned, is well known, on account of its anatomical conformation. This appears to be fully borne out with reference to the incidence of epitheliomata, especially when situated on the scrotum, among the paraffin and oil workers of the Scottish Oil Industry.

With reference to the recent papular eruptions, in the writer's experience, it is impossible to draw any marked distinction as regards cleanliness between those affected and those unaffected. All the workmen concerned make the same use of the facilities provided, but notwithstanding this, a constant percentage of the workmen suffers from this form of occupational eruption, and these are affected shortly after beginning work in the paraffin sheds, while a practically constant percentage escapes. It has been found, however, that of those who have been employed in the paraffin sheds for a short time only, and who are early affected with papular eruptions, a certain proportion recovers quickly. This may be attributed to the fact that at first there is a want of care on/
on/

on the parts of the workmen as regards cleanliness, and in allowing themselves to come unduly into contact with the materials handled, and after they are impressed with the necessity for great cleanliness and for coming as little as possible into contact with drops of oil, recovery takes place to a considerable degree.

Seasonal Conditions.

Experience has shown that as a general rule occupational conditions are worse during Winter months. As might be expected, cold, by lowering the vitality of the skin, accentuates old-standing eruptions, especially those of the nature of dermatitis erythematosa, and erythema simplex. In the former condition the skin is more roughened and scaly, and the warty excrescences are more numerous during Winter and Spring than in Summer months. While this applies with certainty to erythematous conditions, it does not apply equally forcibly to papular eruptions, for though some individuals have more papules in cold weather, as a general rule seasonal conditions have not the same influence on this type of eruption.

Variations in the Plant used in the Process.

A full description of the filter and hydraulic presses has already been given on pages 44 - 46. In some Works hydraulic presses are not used, the green oil and/

and scale being treated several times in filter presses before being sent to sweating sheds. Where hydraulic presses are not used, there is not such a large percentage of men affected as in those works in which both forms of presses are used. This is represented by the following figures:-

In two works in which filter presses only are used, at one examination 57% and 63% of the green shed workmen were unaffected; in two works in which hydraulic presses are used, an examination at the same time showed that 37% and 48% of the green shed workmen were unaffected. Apart from the differences in the workingplant, all other conditions, such as the materials handled, lengths of service, cleanliness, and working conditions were the same to all appearance in each instance.

Measures adopted for the Protection of the Workmen.

During recent years a great deal has been done for the protection of the workmen in the paraffin departments in the various works. These consist of the provision of adequate facilities for ensuring absolute cleanliness of bodies and clothing of the workmen, the use of protective applications for the exposed parts, and regular medical inspection every three months. In each of the works in which the refining of oil and manufacture of paraffin wax are carried out, a complete equipment of baths has been provided for the paraffin/

paraffin shed workmen. A description of one such establishment will suffice to show what has been done in this respect. The bath house is a large well-lit, well-ventilated building, about fifty-five feet long, fifteen feet broad, and twelve feet high, adjoining the paraffin sheds. It is lined internally by white glazed tiles, and is heated to a comfortable heat by hot air or steam pipes. At one end are several (four) glazed porcelain hand basins, fitted with hot and cold water, and above each is a metal container filled with a neutral liquid soap. At the other end is a deep porcelain basin, with a clothes wringer attached, for washing socks and other articles of clothing. Arranged along the back wall, and at right angles across floor are forty-one iron lockers, fitted with pegs for clothes, shelves for boots, and wires for towels, the lockers being heated by hot air pipes passing along bottoms. The lockers are provided with seats for men while changing boots, etc.

On the front wall along the length of building are five spray baths, lined with glazed tiles, and fitted with hot and cold sprays, each in addition having a deep foot bath with a moveable seat. On both sides of each spray bath are cubicles for undressing, so that one man may get prepared while another is using the bath. Each workman is allowed a weekly quantity of soap and towels to be used by himself only. The baths are kept clean by an attendant. On ceasing/

ceasing work, the men wash their arms and legs daily, and their bodies frequently, and after washing their socks, place them in the lockers along with boots, and don their outdoor clothes. On returning to work, the outdoor clothing is hung in lockers and working garments are put on, which are then covered with strong sackcloth aprons as further protection for clothing, etc. The bath houses of each Company are arranged on similar lines, with differences of detail. See Plates 42 and 43.

Protective Applications.

So far as is at present known, the best protective application is castor oil, especially in its semi-crude thick state. This is insoluble in any of the paraffin series, and so forms an impervious covering for the arms, etc. Before beginning work, each workman smears his hands and arms, and occasionally his legs, with castor oil, and occasionally throughout the working day after washing. This has been in use for a long time in the paraffin departments, as nothing better has yet been found.

Applications of glycerine and lysol or carbolic acid have been tried, but have been discontinued on account of the tendency towards excoriation of the skin on the parts on which the application has been used.

Protective Clothing.

No practical form of clothing has been found that can withstand/

Withstand the extremely searching and solvent action of the paraffin series. Leather, rubber and other waterproof materials are readily acted on, and rapidly become saturated with oils, and are not of any real use, though some of the workmen place layers of brown paper inside their boots before beginning work, this being discarded each day.

Treatment.

The various methods of treatment, all of which are purely local, are carried out on the ordinary lines of treatment for skin diseases generally. Occupational comedones are readily removed by the usual method of expression, and permanent improvement is got by persistently removing these by the fingers, rather than with any of the implements for the purpose, as these are apt to cause too much mechanical damage to the surrounding tissues.

Papular conditions readily disappear on ceasing work in paraffin sheds, and as a rule require little or no treatment, as in the early stages these tend to heal spontaneously. Mild antiseptic pastes, such as boric ointment, suffice to prevent septic infection, though this is uncommon, as the oily materials worked with are themselves both aseptic and germicidal. In the more acute forms of erythematous conditions sedative applications are of use, the most effective being ichthyol and lead preparations. In the more chronic/

chronic types, these are also useful, or pastes of zinc oxide and salicylic acid, and if wartiness is a prominent feature, stronger preparations of salicylic acid are beneficial.

In the more rapidly proliferative warty conditions, salicylic and chromic acids readily remove superficial warts, but when these extend more deeply into the skin tissues, carbon dioxide snow is of greater service. Semcn (27) recommends application of radium as the best method of eradicating warts, or a combination of radium and carbonic oxide snow. On any appearance of warts or nodules proliferating too rapidly with excessive growth, removal by excision is a sure method of treatment, and it is exceptional to find recurrence.

The importance of early recognition of the transition stage between benign and malignant conditions cannot be too strongly emphasized, as delay in doubtful cases means unnecessary risks, involving infection of glandular tissues, after which very extensive removal may be necessary.

The periodic examinations of the paraffin shed workmen are of value in this respect, but, as will be seen from the tables of those who have suffered in former years, a great proportion of the cases recorded have occurred among workmen who are not connected with the paraffin shed, so that the early detection of any occupational condition is still a matter of chance as far as these men are concerned.

PART 11.

DETAILS AND RESULTS OF EXAMINATIONS

OF PARAFFIN SHED WORKMEN.

RESULTS OF EXAMINATIONS OF PARAFFIN SHED WORKMEN IN
SCOTTISH SHALE OIL INDUSTRY.

In February, 1919, an agreement was come to between H. M. Home Office (Factory Department) and the various employers in the Scottish Oil Industry engaged in refining the products of shale, whereby a system of routine examinations at quarterly intervals of all the workmen in the various paraffin departments was instituted for the benefit of the workmen concerned.

I was asked by the parties to the agreement to carry out the necessary examinations at the various works, these being Addiewell, Oakbank, Pumpherston, Uphall and Broxburn Oil Works, involving, in all, the examination of about two hundred workmen at intervals of three months between each inspection. Throughout the first examination, it was quite apparent that, if these were to be of any permanent use for comparative purposes, both as between the workmen in the different works, and for future reference, it was necessary that a uniform standard should be established as a permanent basis. It was essential that this standard would be equally applicable to all workmen, one which could be rigidly adhered to, one which would eliminate the personal factor of the examiner, and one which would at the same time take into consideration the various conditions both from a dermatological aspect, and from/

from the practical standpoint of the extent to which the workmen suffered when considering their suitability or otherwise for the work with which they were engaged. It was found impossible to differentiate the varying degrees of severity of the occupational eruptions on a strictly scientific basis, i.e., according to the type of lesion, as in a large proportion of instances several types co-existed, and on the other hand, the extent of an eruption was the actual determining factor in considering a workman's suitability or otherwise for that particular form of work. The standard fixed on as a permanent basis accordingly took largely into consideration the extents of the various occupational eruptions, and it has not been found necessary to make any further alteration on the original basis, all the requirements considered essential having been met satisfactorily.

The conditions of the workmen were divided into five groups as follows:-

Group 1:- Those having no occupational eruptions.

Group 2:- Those having slight erythema, or folliculitis, or not more than five papules.

Group 3:- Those having a slight degree of any form of eruption, and limited in extent.

Group 4:- Those with an extensive eruption of any type.

Group 5:- Those showing any condition approaching malignancy.

For permanently recording the conditions of the workmen

at/

at each examination, I prepared charts showing front and back views of body, with reference letters for the various parts, and giving details of each man's age, length of service in paraffin departments, and the department in which he works. The condition of each man is noted at each examination in coloured crayon thus:-

BLUE is used to represent Papular Dermatitis.

RED is used to represent Erythema and Erythematous Dermatitis.

BLACK represents Comedones, and in a few instances under Group 5, the sites of conditions approaching malignancy.

YELLOW represents soars, callosities, simple warts (papillomata), bruises, and similar non-occupational conditions.

GREEN represents non-occupational skin diseases, such as acne (rosacea or vulgaris) scabies, eczema and psoriasis.

Non-occupational conditions are noted for future reference, a precaution which has been found of service.

(The charts were at first prepared by myself, but latterly these have been supplied by Scottish Oils, Ltd., thus very materially improving the appearance of these permanent records).

A full complement of charts denoting the conditions of the workmen since the first examinations, and also copies of the reports issued on each occasion, are supplied with this paper. These reports give full details of the conditions of the workmen, with alterations from previous examinations, suggestions for improving their conditions, etc. Reference has already been made in the description of the process/

process of manufacture to the various departments in which the paraffin scale is separated from the heavy oil and paraffin (Green Oil), and subsequently refined.

The crude paraffin departments include those in which the paraffin scale is filtered from the green oil by means of filter and hydraulic presses, as described on page 44. These departments are technically known as "Green Sheds", and the workmen are known as "Green Shed Workmen" or "Pressmen". The paraffin refinery is the term applied to the departments in which the remaining oil is "sweated" from the paraffin scale and subsequently refined for commercial use. The workmen in refinery are known as "Sweating Shed Men". These terms are of considerable importance, as throughout the examinations a distinction is drawn between the Green Shed and Sweating Shed Workmen, and statistics are prepared for each of these, as well as for the two classes of workmen combined.

DETAILS of EXAMINATIONS of the PARAFFIN SHED WORKMEN.

The details of each examination are based on the uniform standard described, dividing the workmen into five groups according to their freedom from, or the extent of, occupational eruptions/

eruptions.

(A) GREEN SHED and SWEATING SHED WORKMEN COMBINED.
(Workmen in Crude paraffin departments and in
paraffin refineries).

COMPRISING the RESULTS of FIVE EXAMINATIONS as UNDER:-

	Dates of Examinations.				
	March April, 1919.	July Augt., 1919.	March, 1921.	Sept., 1921.	Feb., 1922.
No. of men examined,	188	146	148	113	80
Group 1,	79 (42.0%)	65 (44.5%)	73 (49.3%)	60 (53.1%)	31 (38.7%)
Group 2,	29 (15.4%)	46 (31.5%)	24 (16.2%)	31 (27.4%)	15 (18.8%)
Group 3,	56 (29.8%)	24 (16.4%)	42 (28.4%)	21 (18.6%)	27 (33.7%)
Group 4,	21 (11.2%)	11 (7.6%)	9 (6.1%)	1 (0.9%)	7 (8.8%)
Group 5,	3 (1.6%)	None.	None.	None.	None.

The average frequency of eruption for the five
examinations is:-

<u>Group 1.</u>	Those having no occupational eruption.....	45.5%
<u>Group 2.</u>	Those having a few papules only.....	21.4%
<u>Group 3.</u>	Those having limited degree of eruption.....	25.1%
<u>Group 4.</u>	Those having extensive eruptions.....	7.6%
<u>Group 5.</u>	Those showing presence of warty growths.....	0.4%

(B) SWEATING SHED WORKMEN (WORKMEN in PARAFFIN REFINERIES).

	Dates of Examinations.				
	March April, 1919.	July Aug., 1919.	March, 1921.	Sept., 1921.	Feb., 1922.
No. of Men examined,	59	41	35	26	13
Group 1,	42 (71.2%)	34 (83.0%)	33 (94.3%)	26 (100%)	11 (84.6%)
Group 2,	3 (5.1%)	3 (7.3%)	1 (2.9%)	None.	1 (7.7%)
Group 3,	10 (16.9%)	2 (4.8%)	1 (2.8%)	None.	1 (7.7%)
Group 4,	3 (5.1%)	2 (4.9%)	None.	None.	None.
Group 5,	1 (1.7%)	None.	None.	None.	None.

Average frequency of eruptions for five examinations:-

<u>Group 1.</u> Those having no occupational conditions...	84.0%
<u>Group 2.</u> Those having a few papules only.....	4.6%
<u>Group 3.</u> Those having a limited degree of eruption.	8.0%
<u>Group 4.</u> Those with extensive eruptions.....	2.8%
<u>Group 5.</u> Those with malignant growths.....	0.6%

These figures show how comparatively free the sweating shed workmen are from occupational lesions; at one examination all were quite free, while there has been a steady improvement since date of first inspection.

During the examination of March, 1919, one man included in above summary was placed in Group 5 on account of a malignant growth on his left arm, after thirty years' service in/

in sweating sheds. This is the only instance I have been able to trace of a malignant condition occurring among sweating shed workmen. The growth was excised, with permanent recovery without recurrence.

It will be noted that at first examination the proportion of sweating shed men in Group 3 was rather high. This is entirely due to the greater prevalence of occupational eruptions among the Addiewell workmen, these having been employed in this capacity for many years and under circumstances not so favourable in former years for the prevention or amelioration of the skin conditions. These were only examined on one occasion, the refinery and paraffin sheds being subsequently closed.

(C) GREEN SHED WORKMEN (CRUDE PARAFFIN DEPARTMENTS).

	Dates of Examinations.				
	March April, 1919.	July Aug., 1919.	March, 1921.	Sept., 1921.	Feb., 1922.
No. of Men examined,	129	105	113	87	67
Group 1,	37 (28.7%)	31 (29.5%)	40 (35.4%)	34 (39.1%)	20 (29.8%)
Group 2,	26 (20.2%)	43 (41.0%)	23 (20.4%)	31 (35.6%)	14 (20.9%)
Group 3,	46 (35.6%)	22 (20.9%)	41 (36.3%)	21 (24.1%)	26 (38.8%)
Group 4,	18 (13.9%)	9 (8.6%)	9 (7.9%)	1 (1.2%)	7 (10.5%)
Group 5,	8 (1.6%)	None.	None.	None.	None.

The average frequency for the five examinations is as follows:-

- Group 1. 32.3% are unaffected.
- Group 2. 27.3% have not more than five papules.
- Group 3. 31.1% are affected to a limited degree.
- Group 4. 8.9% are extensively affected.
- Group 5. 0.4% show presence of malignant growths.

These figures show the much greater prevalence of occupational dermatoses among the workmen in the crude paraffin departments, as compared with the workers in sweating sheds (paraffin refineries). This is due to constant close contact with the oily products during the separation of the paraffin scale, as fully described on pages 44 et seq.

SEASONAL VARIATION.

SEASONAL VARIATION.

In scrutinising the percentages of those affected in each department, as well as those for both sections combined, it will be seen that during the Summer and Autumn examinations, fewer men are included in Groups 3 and 4, and that a larger proportion are included in Groups 1 and 2, than during the Winter and Spring examinations, i.e., during Summer and Autumn there is a decided tendency towards improvement of the occupational conditions, the colder months having an adverse effect. This may be illustrated from table (O) referring to Green Shed Workmen.

	March, 1919.	July, 1919.	March, 1921.	Sept., 1921.
<u>GROUPS 1 and 2:-</u>				
No eruptions or a few papules only,	48.9%	70.5%	55.8%	74.7%
<u>GROUPS 3, 4, & 5:-</u>				
Limited & extensive eruptions,	51.1%	29.5%	42.2%	25.3%

The preceding figures refer to the paraffin shed workmen as one complete group of men employed by Scottish Oils, Ltd. On a more detailed analysis of the conditions of the paraffin workers of each oil work, we find differences in the frequency and severity of the occupation lesions, which can to some extent be explained by local circumstances.

In carrying out the examinations, the statistics relating to the workmen of each work are kept separate, and thus comparisons/

comparisons can readily be made. The differences are most readily shown by summarising the results of corresponding examinations at each work, according to the groups into which the men are placed, on the standard already described.

(D) GREEN SHED WORKMEN ONLY - FIGURES FOR EACH WORK.

(a) GROUP 1 - Those free from occupational conditions:-

Work.	Dates		of Examinations.		
	March, 1919.	Sept., 1919.	March, 1921.	Sept., 1921.	Feb., 1922.
Pumpherston,	25.7%	25.0%	38.2%	34.4%	40.6%
Broxburn,	28.0%	28.0%	33.3%	45.5%	None.
Uphall,	38.9%	47.4%	50.0%	None.	None.
Addiewell,	27.0%	None.	None.	None.	None.
Oakbank,	28.0%	24.0%	30.0%	39.4%	20.0%

(b) GROUP 2 - Those having not more than five papules:-

Pumpherston	22.9%	50.0%	26.5%	37.5%	18.8%
Broxburn,	20.0%	48.0%	22.2%	41.0%	None.
Uphall,	11.1%	15.8%	None.	None.	None.
Addiewell,	19.1%	None.	None.	None.	None.
Oakbank,	24.0%	40.0%	20.0%	30.3%	22.8%

(c) GROUP 3 - Those with limited degree of Eruptions:-

Pumpherston,	45.7%	19.5%	32.3%	28.1%	37.5%
Broxburn,	44.0%	16.0%	33.4%	9.0%	None.
Uphall,	16.7%	26.3%	25.0%	None.	None.
Addiewell,	26.9%	None.	None.	None.	None.
Oakbank,	36.0%	24.0%	45.0%	30.3%	40.0%

(d) GROUP 4 - Those with extensive Eruptions:-

Pumpherston,	5.7%	5.5%	3.0%	None.	3.1%
Broxburn,	8.0%	8.0%	11.1%	4.5%	None.
Uphall,	33.3%	10.5%	25.0%	None.	None.
Addiewell,	19.2%	None.	None.	None.	None.
Oakbank,	12.0%	12.0%	5.0%	None.	17.2%

(e) GROUP 5 - Those with any condition approaching malignancy:-

Pumpherston,	None.	None.	None.	None.	None.
Broxburn,	None.	None.	None.	None.	None.
Uphall,	None.	None.	None.	None.	None.
Addiewell	7.7%	None.	None.	None.	None.
Oakbank,	None.	None.	None.	None.	None.

LENGTH of SERVICE.

On examining these figures, it will readily be seen that of the workmen employed in Addiewell and Uphall Oil Works a much larger proportion is included in Group 4 than at any of the other Works, i.e., there is a high frequency of the more extensive types of occupation lesions. This is accounted for by the very long terms of service in the paraffin departments. For example, Group 4 of the Addiewell workmen comprises seven workmen, their lengths of service in paraffin sheds being respectively 38, 36, 33, 29, 22, 21, and 15 years. Group 5 of the same workmen includes two men who have been employed in this department for 40 and 32 years respectively.

All those in Groups 4 and 5 suffered from extensive indurated dermatitis, with the typical appearances shown on plates.

Group 4 of Uphall oil workers comprises seven workmen who have been employed for 39, 34, 28, 27, 18, and 18 years, and one lad who had only been employed for four months and at the end of that period was literally covered with a pustular dermatitis. Group 5 of Uphall workmen consists of one sweating shed workman, having been thus employed for 30 years. This is the only instance of a sweating shed worker having been affected with a malignant condition. All those in Groups 4 and 5 suffered from extensive indurated dermatitis.

These/

These facts and figures therefore show the very potent influence which the longer terms of service as paraffin workers have in the production of the extensive indurated types of dermatitis. Some of the plates illustrating this condition were got from Addiewell and Uphall workmen.

Another point of importance is seen from the figures. In scrutinising figures of examination made in September, 1921, it will be noticed that of the Broxburn and Oakbank workmen, a very small proportion were included in Groups 3 and 4, showing a marked contrast to the figures for previous examinations. The explanation is to be found in the fact that the examinations of these two groups of workmen were made after a cessation of work for some six months or so, during which time all the papular eruptions healed, and even the more indurated types had undergone some improvement.

These details therefore show the readiness with which the papular types disappear on removing workmen from the paraffin sheds. This point is of practical importance, as at present it is only by the removal of those most affected and substituting for them others who have not shown the same tendency towards the action of paraffin substances that the prevalence of the eruptions can be diminished.

A further point may be mentioned. At the examination of the Oakbank workmen in February, 1922, the number of men placed in/

in Groups 3 and 4 was larger than at any previous examination, due to the high frequency of papular eruptions. These were most prevalent on those with short periods of service in the paraffin sheds, and occurred shortly after beginning this form of work. Throughout the examinations at all the works, there has been noted a tendency for the more recent employees to be affected with papular eruptions, as if the workmen were not sufficiently impressed with the necessity for cleanliness, and the necessity for taking all possible precautions, such as lubricating arms with castor oil, etc., and only after being some time employed were proper protective measures taken by them. During this and the previous examination of the same men, several instances of occupation comedones were got, described in Part 1 under that head. This condition has been almost solely confined to the Oakbank workmen. There are also considerable differences in the sites of the occupational lesions. During two recent examinations, the sites of the lesions in the workmen of the various works/

Works have been as follow :-

	<u>MARCH, 1921.</u>		<u>FEBRUARY, 1922.</u>	
	<u>Arms only.</u>	<u>Arms & legs.</u>	<u>Arms only.</u>	<u>Arms & legs.</u>
Pumpherston,	62.0%	38.0%	75.0%	15.0%
Broxburn,	33.3%	66.6%	-	-
Uphall,	43.0%	57.0%	-	-
Oakbank,	34.5%	65.5%	20.7%	73.4%

It will thus be seen that there is a lessened tendency towards eruptions on legs among the Pumpherston workmen than among the others, while among the Oakbank men there is a much greater proportion of men who show some form of lesion on legs.

This can only be due to the fact that in some of the works the lower extremities come more into contact with the oily paraffin than in others.

Accompanying Part 11, giving the results of examinations of the paraffin shed workmen, are 136 charts, showing the distribution of the various types of eruption among the men affected.

Also I have supplied copies of my reports issued with each examination. Addiewell workmen were only examined on one occasion, the paraffin sheds of that work being subsequently closed.

I have to express my indebtedness to the Management of Scottish Oils, Ltd., for the great facilities given me in completing/

completing this thesis, and to their Chief Chemists for the accuracy of the information regarding the chemical processes which have been given here as of importance in the consideration of the occupation dermatoses of the paraffin workers of the Scottish Shale Oil Industry. My thanks are also due to Dr. Archibald Leitch for the results of experiments on mice with the various oils sent.

THE FIRS,
BROXBURN,
26th APRIL, 1922.

PART II.

OCCUPATION DERMATOSES.

REPORTS of EXAMINATIONS at the VARIOUS
WORKS.

Alex. Scott, M.B.C.M.

*Brockburn,
Leithgowshire.*

REPORTS of EXAMINATIONS of PUMPHREYSON OIL COY'S

PARAFFIN SHED WORKMEN.

1st Exam.

Dr. Scott.

REPORT of EXAMINATION of PUMPHREY OIL COY'S

PARAFFIN SHED WORKMEN.

MARCH, 1919.

REPORT of EXAMINATION of PUMPHERSTON OIL COY'S PARAFFIN

SHED WORKMEN. MARCH. 1919.

In accordance with instructions received from James Bryson, Esq., General Manager of Pumpherston Oil Coy., and from H.M. Superintending Inspector of Factories, to the effect that all workers in the Paraffin Sheds had to be examined at least once every quarter by the Factory Surgeon, I carried out the first examination of these workmen between 25th Feby. and 5th March, 1919, and have to submit the following report of the result of this examination.

General Conditions found on examination:- The object of examining Paraffin Workers periodically being to ascertain the skin conditions met with, in the varying degrees of severity, among the workers, and, if necessary, to take steps for their protection, the whole surface of the body was examined by us in every instance, while special attention was paid to the parts known to be most frequently affected, viz., arms and forearms, legs, feet and scrotum. During this examination, the following skin conditions were noted:-

1. Erythema:- This consists in an inflammatory condition of skin varying in degree from a simple reddening or mottling (hyperaemia) occurring in more or less diffuse patches, to

2. Erythematous dermatitis, in which the discoloration is more marked.

In this condition there is a tendency to permanent pigmentation of skin, and ultimately to some slight induration of superficial layers of skin, as evidenced by whitish patches, the result of a healed dermatitis. In some of the more chronic cases, there is also a tendency/

tendency formation of small flat patches of thickening of the horny layers of the skin, giving the appearance of wartiness (*verruca plana*). This usually occurs in patches about the size of rather less than the area of a threepenny piece, and these are as a rule covered by small blackish scales.

3. Papular Dermatitis (*Erythema papulatum*). This consists entirely of small reddish or purplish red elevations, pea shaped, flattened on the top, or with a small central depression. The numbers of papules vary from a very few to great numbers distributed all over the affected parts. In some cases these papules occur without erythema, in others they appear with the erythematous dermatitis, while in old standing cases the two conditions are usually associated and coexistent, and in these an eczematous condition is sometimes present, in which the skin is thickened, infiltrated, somewhat elevated or almost horny (*eczema scleroseum*), with desquamation of superficial layers of skin in fine scales. In a few cases on the tops of the papules are seen small horny excrescences, having the appearance of cutaneous horns. Frequently associated with this papular eruption is -

4. Pustular dermatitis, due to the breaking down of papules, or to the inflammatory process being sufficiently acute to cause destruction of small points of superficial layers of skin. These have the appearance of small boils, with pustular tops.

Sites of Eruptions:- In 21 men (77.8% of those affected), the eruption was confined to upper extremities. In three of these instances the eruption extended to the outer aspects of both shoulders. In 6 men (28.3% of those affected) some eruption was seen on hands and feet. One papule was seen on back of neck. No eruption was seen/

seen on any other part of the body.

Details of Examination. For descriptive purposes, I have divided the workmen examined into groups according to freedom from, or extent of eruption, viz:-

Group 1. Men who show no trace of any skin lesion.

Group 2. Men who have one, two or three papules, not more.

Group 3. Men who show any eruption to a slight degree, limited in extent and not diffused.

Group 4. Men who have extensive eruptions over hands, legs or both.

On several men in Group 2 there were warts of ordinary character, such as may be seen on any hand; others had one or two isolated papules clearly due to contact with paraffin products. Reference may be made to the detailed description of each man examined and chart showing extent of his eruption, supplied with this report. In every case the name, age, occupation and length of service are given, as reference will be made later to these details in their relation to the prevalence of the skin conditions met with. The Crude Paraffin Wax Department is described as "Green Sheds", while the Refined Department is described as "Sweating Sheds".

Workmen employed in Paraffin Sheds. Groups.

Fortytwo workmen were examined by me, 7 of whom work in Sweating Sheds and 35 work in Green Sheds. Fifteen of these have been placed in Group 1, there being no skin affection of any kind. The ages of workmen in this group vary from 17 to 52 years, while their lengths of service vary from 1 month to 16 years. The names are arranged according to length of service:-

Group 1. Men who show no trace of any skin lesion:-

<u>Name.</u>	<u>Age.</u>	<u>Occupation.</u>	<u>Length of service</u>
John Ross	33	Sweating Sheds	18 yrs.
Thos. Whitelaw	42	Green Sheds	12 "
Geo. Cleland	30	Sweating Sheds	11 "
Thos. Goodall	30	" "	11 "
Geo. Baxter	38	" "	10 "
David McBeth	44	Green Sheds	9 "
Herbert Hankin	41	" "	8 "
Wm. Pender	42	" "	8 "
Geo. Rae	38	" "	7 1/2 "
John Thomson	39	" "	6 "
John Gray	45	" "	4 "
Jas. Crichton	48	" "	3 "
Thos. Marr	52	" "	2 "
Jas. Stenhouse,	39	Sweating Sheds	3 months.
Jas. Christie,	17	" "	1 month.

These form 35% of employees in Paraffin Sheds.

Group 2. A few simple warts or papules, not more than two or three:-

<u>Name.</u>	<u>Age.</u>	<u>Occupation.</u>	<u>Length of service.</u>
John Raeburn,	54	Green Sheds	25 yrs.
Hugh Pettigrew	52	" "	20 "
Hugh McCrudden,	45	" "	15 "
Jas. Mooney	46	" "	12 "
Robert Burns,	34	Sweating Sheds	10 "
Jas. McFarlane,	33	Green Sheds	8 "
Alex. McVicar	43	" "	5 "
Jas. Canning	38	" "	5 "
Frank Logan,	33	" "	3 1/2 "

These form 21.4% of men employed in Paraffin Sheds. The ages of the workmen in Group 2 vary from 23 to 54 years, while the lengths of service vary from 3 1/2 to 25 years.

Group 3/

Group 3. Showing slight degree of erythematous or papular dermatitis, localised to confined limits and not diffuse:-

<u>Name.</u>	<u>Age.</u>	<u>Occupation.</u>	<u>Length of service.</u>	
Jas.	Gilhooley	48	Green Sheds	25 yrs.
Jos.	McLaren	38	" "	20 "
Michael	Duffin	53	" "	15 "
Alex.	Fleming	55	" "	15 "
John	Currie,	48	" "	12 "
John	Smith	46	" "	10 "
Ter.	Lynch	53	" "	10 "
John	McIntosh	39	" "	8 "
Jas.	Taggart,	48	" "	7 "
Duncan	McKerracher	48	" "	6 "
Robt.	Powley,	27	" "	5 "
Geo.	McGill,	38	" "	4 $\frac{1}{2}$ "
John	Allan,	35	" "	4 "
Peter	McVeigh	32	" "	3 "
Thos.	Trowbridge	39	" "	1 $\frac{1}{2}$ "
Geo.	Chapman	27	" "	3 months.

Sixteen men are included in this Group, forming 38% of the workers in the Paraffin Sheds. Their ages vary from 25 to 55 years, and lengths of service from 3 months to 25 years.

Group 4. With a marked degree of erythematous or papular dermatitis:-

<u>Name.</u>	<u>Age.</u>	<u>Occupation.</u>	<u>Length of service.</u>
Andw.	Gardiner	48 Green Sheds (now Oil Refy. Labr.)	12 yrs.
John	Wylie	46 Green Sheds	10 "

This Group forms 4.2% of the total number of workmen employed in Paraffin Sheds. The ages of men in this Group are 46 and 48 years, having a length of service of 10 and 12 years respectively.

REMARKS:-

Frequency:- 35.7% of the workmen are altogether free from any sign of Paraffin Eruption.

21.4% are affected to a very slight extent, showing only a very few papules.

38.1% are affected to a moderate extent.

4.8% (two men) are affected in a more marked degree.

NOTE:-

In consideration of the above percentages, it must be pointed out that the influence of the numbers of workmen employed in the Sweating Sheds is most marked. Of the workmen examined at Pumpherton, only 7 men out of 42 were Sweating Shed workers, the remainder, 35, being Paraffin Shed Workers.

Cleanliness:- All the workmen are clean, both in body and clothing. No evidence of specific contagious disease was got.

Exciting Cause:- There can be no doubt but that in every case contact with paraffin oil products in refined or semi-refined state is the actual exciting cause; the arms, being more exposed, suffer most while the legs are affected by drops of oil, etc., from the hydraulic presses or other machinery used in the process of treating the oil products getting on to clothes or into boots.

Predisposing Causes:- Age cannot be said to have much influence in the causation of the eruptions, as many elderly men are quite free, conversely, the eruptions are just as frequent on young men as on those in middle life.

In Group 1, 7 are over 40 years of age, 3 are under 40 years.

In Group 2, 5 " " 40 " " " 4 " " 40 "

In Group 3, 6 " " 40 " " " 8 " " 40 "

Length of Service:- This had very little influence in the causation of paraffin eruptions, as many of the workmen who have been/

been continuously employed in these departments are quite free.

On the other hand some of those who are affected have a much shorter period of service.

In Group 1, 8 have over 8 years service, 7 have under 8 years service.

In Group 2, 5 " " 10 " " 4 " " 10 " "

In Group 3, 7 " " 10 " " 9 " " 10 " "

Occupation:- Six of Sweating Shed Workmen (85.7%) of seven examined, were quite free, and placed in Group 1. Nine Green Shed Workmen (35.7%) out of 25 were free from eruption, while 36 Green Shed Workers (74.3%) have been placed in Groups 2, 3, and 4, as being more or less affected. It would seem therefore that there is a greater tendency for those working in the Crude Department to be subject to this condition. This is of importance in connection with Note under "Frequency" on page 6.

Personal Idiosyncrasy:- Conditions such as a tendency to skin disease or hypersensitiveness of skin must have some influence as a predisposing cause.

Cleanliness:- This must have an important effect in preventing the development of eruptions. All the workmen are certainly of the opinion that only by great care in keeping the skin well washed can it be kept free from irritation. The wearing continuously of clothing saturated with oily material also acts prejudicially. In a similar way it can be easily understood that irritation is readily caused by the oily materials in contact with the hair follicles, and gradually getting to the more sensitive layers of skin, through the hair follicles and sweat ducts.

Prognosis:-/

Prognosis:- Recent eruptions readily disappear on ceasing to work in the Paraffin Sheds. Eruptions of longer standing also disappear in time, but there is apt to be left some dryness, wartiness or induration of skin. At the same time, though no serious condition was noted among the workmen, it is not to be assumed that the condition is unworthy of attention. The greatest care must be taken to adopt all the preventative measures possible, and to examine the workmen at regular intervals.

Prophylactic Measures.

1. Facilities for Cleanliness:- This is very important. A complete and perfect installation of upright spray baths, with lockers for containing clean clothes, and arrangements for drying soiled clothing, is in process of completion. The baths and conveniences for keeping clothing in good condition should be fully used by all the workmen, with the greatest advantage to themselves.

2. Protective Applications:- Castor Oil is largely used by the workmen for the protection of arms, etc., exposed while at work. This substance, not being a solvent of any paraffin products, forms an insoluble covering and prevents the irritative action of these materials. In addition, the workmen believe that it has to some extent a curative action, in removing crusts, etc., and so keeping the skin smooth.

10th March, 1919.

3rd Exam.

Dr. Scott.

REPORT on EXAMINATION of WORKMEN in
PARAFFIN DEPTS., PUMPHERSTON WORKS.

MARCH, 1921.

Examination of Workmen in Paraffin Dept., Pumpherston Works.

In accordance with arrangements, I carried out the second examination of the workmen in Paraffin Depts., Pumpherston Works, between March 1st and 9th., and submit the following report on the conditions of the workmen employed.

The various conditions due to the nature of employment met with were:-

- (1). Simple Erythema.
- (2). Erythematous Dermatitis.
- (3). Papular Dermatitis.
- (4). Pustular Dermatitis.

These conditions have been fully described on a former occasion, and reference may be made to the Report of 10th March, 1919, for detailed description of each condition.

In addition to those conditions incidental to employment, several other common skin diseases were observed, such as Acne Vulgaris, Eczema and Psoriasis .

In carrying out the examinations, the condition of each workman was compared with that illustrated on charts accompanying first report to enable a comparative analysis of their former and present conditions to be made; as; however, several were examined in 1919 who no longer are employed in the Sheds, and some examined recently did not work in the Paraf. Sheds at date of first examination, there is a possibility of some discrepancy in the results, as shown in the analyses of figures relating to various groups.

As before the conditions due to employment were divided into four groups:-

- (1). Those having no eruption due to employment.
- (2). Those having a few papules only.
- (3). Those showing a slight degree of eruption and limited in extent.
- (4). Those showing extensive eruption.

In all, out of 43 men employed in the Paraffin Dept., 41 were examined, 7 of whom work in the Sweating Sheds and 34 in the Green Sheds, and the following summaries show the results of present examination. The figure in parenthesis after each/

each man's name shows the group in which he was placed when examined in March,

1919:-

GROUP 1:- Free from any condition due to employment -

20 Men, representing 48.8% of those examined, 7 of whom are employed in the Sweating Sheds.

		Group	Age.	Dept.	Length of Service.
John	Ross,	(1).	34.	Sw. Houses,	18 years.
George	Cleland,	(1).	32	do.	13 "
George	Baxter,	(1).	31	do.	12 "
Robert	Burns,	(2).	37	do.	12 "
James	Stenhouse,	(1).	42	do.	2 $\frac{1}{4}$ "
James	Christie,	(1).	20	do.	2 "
James	Peden,	(1).	25	do.	2 "

and 13 are employed in Green Sheds.

Hugh	McCrudden,	(2).	48	Coolerman,	17 years.
John	Smith, - not prev. examined.		49	do.	12 "
David	Macbeth,	(1).	46	Pressman,	11 "
James	Macfarlane,	(2).	36	do.	10 "
Herbert	Hankin,	(1).	44	Coolerman,	10 "
James	Cunning,	(2).	42	Pressman,	7 "
Robert	Powley,	(3).	30	do.	7 "
John	Gray,	(1).	47	Fitter,	6 "
James	Crichton,	(1).	51	Pressman,	5 "
Peter	McVeigh,	(3).	35	do.	5 "
Thos.	Marr,	(1).	54	do.	4 "
Joseph	Slattery - not prev. examined,		36	do.	2 "
Edward	Nicol - not prev. examined,		18	do.	4 mths.

This Group included 48.8% of men examined. In March, 1919, the percentage of Group 1 Men was 35% of those examined, showing an improvement of 13.8%, which is due to 6 men having recovered from paraffin conditions and therefore being now graded Group 1. This represents an absolute improvement to that extent, as 3 men formerly in Group 1 were not examined, one having left the employment, one being ill, and one having refused, while 3 men examined recently were not included in previous Report. Two men, William Peden and Thos. Whitelaw, formerly in Group 1, have been placed in Group 2, on account of slight papular eruption.

(over)

GROUP 2 - Having a few papules only.

Nine men, 22.1% of those examined have been graded Group 2.

		Group.	Age	Dept.	Length of service
John	Raeburn,	(2).	57.	Engineman,	27 years.
Hugh	Pettigrew	(2).	55	Pressman,	22 "
Thos.	Whitelaw,	(1).	44	Engineman,	14 "
Jas.	Mooney,	(2).	49	Pressman,	14 "
Wm.	Pender,	(1).	50	do.	10 "
Duncan	McKerracher	(3).	50	do.	8 "
Alex.	McVicar,	(2).	45	do.	7 "
John	Allan,	(3).	28	do.	6 "
George	Hogg - not prev. examined	39		do.	1 1/2 "

Of these 2 men already referred to were formerly in Group 1, and one has been transferred from Group 3. The ages vary from 57 to 28 years, and length of service from 27 years to 1 1/2 years.

GROUP 3 - Having localised eruptions limited in extent.

This comprises 11 men, 26.8% of those examined.

James	Gilhooley	(3).	50	Pressman.	27 years.
Joseph	McLaren,	(3).	41	do.	22 "
Alex.	Fleming,	(3).	58	Engineman,	17 "
Michael	Duffin,	(3).	55	Pressman,	17 "
John	Currie,	(3).	51	do.	14 "
Andw.	Gardner,	(4).	51	do.	10 "
John	McIntosh,	(3).	42	do.	10 "
George	McGill,	(3).	40	do.	6 1/2 "
Thos.	Trowbridge,	(3).	32	do.	3 1/2 "
Dan.	Docherty (- not prev. examined -)		31	do.	1-1/3 "
David	Reeves - not prev. examined	24		do.	1 "

The ages vary from 58 to 24 years, and length of service 27 years to 1 year.

Andrew Gardner has improved very much, and has been transferred from Group 4.

GROUP 4 - Having extensive eruption. 2.4% of those examined.

John	Wylie	(4).	48	Pressman.	12 years.
------	-------	------	----	-----------	-----------

This man has improved somewhat though eruption is still extensive.

Frequency:- Figures in parenthesis refer to Groups in March examination 1919.

(over)

Frequency (Cont'd):-

- Group 1:- 48.8% (35.7% March 1919)
 Group 2:- 22.0% (21.4% March, 1919).
 Group 3:- 26.8% (38.1% March, 1919).
 Group 4:- 2.4% (4.8% March, 1919).

General Remarks:- All those employed in Sweating Sheds are now free from eruption; those affected without exception work in or about Green Sheds. As stated in previous report, neither age nor length of occupation can be said to have a decided influence in determining the presence of eruption, although of the men examined for the first time who have not been employed over 2 years in the Paraffin Sheds -

- 2 have been placed in Group 1.
- 1 has been placed in Group 2.
- 2 have been placed in Group 3.

While so far we have not a sufficient number of recent employees in Paraf. Sheds in Pumpharston Works to comment on with any assurance, elsewhere where there are a considerable number of recent employees, examination shows that a certain proportion tends to become affected within a short time of beginning work in Paraffin Dept., while others remain free, and future experience may show whether there may not be some determining factor predisposing to early appearance of eruption in some and not in others.

Site of Eruption:- Of the 21 men showing some form of paraffin eruption, 13, i.e., 62%, have eruption on hands and arms only, 6 or 28.5% have eruption on arms and legs, 2(9.5%) have eruption on legs only. Eruption on shoulders is less frequent than formerly.

Cleanliness:- The condition of the workmen in this respect leaves very little to be desired. Full advantage seems to be taken of the bathing facilities, resulting throughout in a general improvement in the conditions due to paraffin.

General:-

General:- In my opinion the workmen are reasonably interested in the routine examination, and I was agreeably impressed with their readiness to assist in every way, both by their preparedness and by their pointing out any conditions requiring to be noted in course of examination.

22nd March, 1921.

Dr. Scott.

REPORT ON EXAMINATION OF WORKMEN IN
PARANTIN DEPTS., PUMPHERSTON WORKS.

JULY, 1921.

Examination of Workmen in Paraffin Departments, Pumpharston Works.

The periodical (quarterly) examination of the workmen in Paraffin Depts., Pumpharston Works, was carried out by me from 1st to 4th July, 1921, and the following report is a summary of the conditions of the workmen at that date.

As before, the conditions due to employment seen in the Pumpharston workers were comprised under the four heads:-

- (1). Simple Erythema.
- (2). Erythematous Dermatitis.
- (3). Papular Dermatitis.
- (4). Pustular Dermatitis., all of which have been described previously.

In addition to these, several men suffered from old standing acne vulgaris, having a history of that condition prior to employment in the Paraf. Depts., and therefore neither caused nor apparently aggravated by contact with paraffin products in the course of employment.

The differentiation into the various groups according to extent of eruption was again rigidly adhered to -

- Group 1, those having no eruption due to employment.
" 2, those having a few papules only.
" 3, those showing a slight degree of eruption, limited in extent.
" 4, those having extensive eruption.

In all 40 men were examined, 7 of whom work in the Sweating Houses, and 33 in or about the Green Sheds. The figure in parenthesis after each man's name shows group in which he was placed when examined in March, 1921.

GROUP 1 - those having no eruption due to employment:-

This Group comprises 16 men, 40% of those examined, 6 of whom are Sweating House/

DUP 1 (Cont'd):-

See workers, and 10 work in or about Green Sheds.

<u>Sweating House Men:-</u>		Group March, 1921.	Age.	Length of service.
Man	Ross	(1)	34	18 years.
George	Cleland	(1)	32	13 "
Art.	Barns,	(1)	37	12 "
James	Stenhouse	(1)	42	21 "
James	Peden	(1)	25	21 "
James	Christie	(1)	20	21 "

Green Shed Workmen:-

Man	Rasburn	(2)	57	27 years.
John	McCrudden	(1)	48	17 "
Man	Smith	(1)	49	12 "
Wid	MacBeth	(1)	46	11 "
Robert	Hankin	(1)	44	10 "
James	MacFarlane	(1)	36	10 "
Man	Thomson	(1)	42	8 "
James	McKerracher	(2)	50	8 "
Arthur	McVeigh	(1)	35	5 "
George	Hogg	(2)	39	12 "

In March, 1919, this Group comprised 35% of those examined, and in March, 1921, 1.8%. One man (Thomas Marr) in Group 1, March, 1921, was on leave and therefore was not examined at this time. Three men, having formerly in Group 2, being now free from infection have been placed in this Group, while 7 men have become slightly affected and have therefore been removed to Group 2.

DUP 2 - those having a few papules only:-

Fifteen men are included in this Group, 37.5% of those examined. One only is a Sweating House worker.

George	Baxter	(1)	31	12 years.
--------	--------	-----	----	-----------

and 14 are Green Shed Workmen -

(over)

GROUP 2 (Cont'd):-Green Shed Workmen:-

		Group March, 1921.	Age.	Length of service.
hos.	Whitelaw	(2)	44	14 years.
hgh	Pettigrew	(2)	55	22 "
Joseph	McLaren	(3)	41	22 "
Mass	Mooney	(2)	48	14 "
Joseph	Slattery	(1)	36	10 "
William	Pender	(2)	50	10 "
George	Rae,	(1)	48	10 "
lex.	MacVicar,	(2)	45	7 "
Mass	Cunning	(1)	42	7 "
abt.	Powley	(1)	30	7 "
ohn	Allan	(2)	28	6 "
Mass	Crichton	(1)	51	5 "
aniel	Docherty	(3)	31	1 1/2 "
dward	Nicol	(1)	18	1 1/2 "

Seven of these in this Group have been transferred from Group 1, while
have been transferred from Group 3.

GROUP 3 - those showing a slight degree of eruption, limited in extent:-

Nine men, 22.5% of those examined, are included in this group, and all are
workers in the Green Shed Dept.

Mass	Gilhoolay	(3)	50	27 years.
lex.	Fleming	(3)	58	17 "
Michael	Duffin	(3)	55	17 "
ohn	Currie	(3)	51	14 "
ohn	Wylie	(4)	48	12 "
ohn	McIntosh	(3)	42	10 "
George	McGill	(3)	40	7 "
Mass.	Trowbridge	(3)	32	4 "
avid	Reeves	(3)	24	1 1/2 "

John Wylie has been transferred from Group 4 on account of gradual and
continuous improvement, while two men, though showing a distinct improvement in
the paraffin condition, still have extensive old standing acne vulgaris, and are
therefore retained on that account in this group.

(over)

Frequency:-

	<u>March, 1919.</u>	<u>March, 1921.</u>	<u>July, 1921.</u>
Group 1,	35.7%	48.8%	40.0%
Group 2,	21.4%	22.0%	37.5%
Group 3,	38.1%	26.8%	22.3%
Group 4,	4.8%	2.4%	Nil.
	<u>100.0%</u>	<u>100.0%</u>	<u>100.0%</u>

Alterations in Grouping since March, 1921:-

Improvements:- 3 men have been transferred from Group 2 to Group 1.
 2 " " " " " " 3 " " 2.
 1 man has been transferred from " 4 " " 3.

Deteriorations:- 7 men have been transferred from Group 1 to Group 2.
 Reference will be made later on in remarks to the alterations in grouping.

Sites of eruptions:-

Of the 24 men affected, 15 (62.5%) have eruptions on arms only, 4 (16.7%) have eruptions on arms and legs, 3 (12.5%) have eruptions on legs only, 2, (8.3%) have eruptions on arms and trunk.

General Remarks:-

With one exception, all those affected work in the Green Sheds.

A general improvement, especially in the more extensive conditions, is certainly apparent at this examination, and although the percentage composition of the different groups is not much altered, the tendency even of the more aggravated types is towards improvement, as a result of the various means adopted for the prevention of the condition. Whether this improvement is seasonal or is progressive, can only be decided after frequent examinations, but meanwhile the percentages of groups 3 and 4, under heading "Frequency", show a steady decline in the more extensive conditions.

Another/

General Remarks (Cont'd):-

Another point of interest is seen in the fluctuation of the percentage figures of Groups 1 and 2 at the various examinations. This is caused by men being occasionally free from eruption, and at other times having one or two papules which in turn readily disappear. In a large proportion of those in Group 2, the papules described and recorded on the charts in March, 1921, had disappeared, having completely healed, while others had made their appearance in different sites and have been duly described and recorded on the charts relative to the present examination. The inference therefore is that in the early stages, papules readily heal in a few weeks time, and this emphasises the necessity for carrying out periodical examinations of men on continuous work in the Paraffin Depts. at intervals of not more than 3 months.

I am quite satisfied that all the workmen realise that the examinations are in their own interests, and every help was given to me by them in carrying out the undertaking, both by their preparedness and their assistance in showing variation from their conditions on former examinations.

Alexander Scott
W.B.H.

The Firm,
Broxburn,
18th July, 1921.

Dr. Scott.

REPORT on EXAMINATION of WORKERS in
PARAFFIN DEPTS.. PUMPHURSTON WORKS.

OCTOBER, 1921.

Examination of Workmen in Paraffin Departments, Pumpherston Works.

October, 1921.

The periodic (quarterly) examination of workmen in paraffin sheds in Pumpherston Works was carried out by me between 3rd and 10th October 1921, and the following report summarises the condition of workmen at that date.

As before, the conditions due to employment seen in the Pumpherston workers were comprised under four heads:-

- (1) Simple Erythema.
- (2) Erythematous Dermatitis.
- (3) Papular Dermatitis.

(4) Pustular Dermatitis., All of these conditions have been already described. In addition to these conditions several men were found to be affected with old standing acne vulgaris, which could not be attributed to their working with paraffin products, and which did not appear to be aggravated by such work.

The differentiation into the various groups was again rigidly adhered to:-

- Group 1, Those having no eruption due to employment.
- " 2, Those having a few papules only.
- " 3, Those showing a slight degree of eruption but limited in extent.
- " 4, Those having extensive eruption.

In all 39 men were examined, 7 of whom work in the Sweating houses, and 32 in or about the Green Sheds. The figure in parenthesis after each man's name represents the group in which he was placed at previous examination in July, 1921.

GROUP 1. Those having no eruption due to employment.

This group comprises 18 men, 46.1% of those examined. All the sweating/

Sweating Shed men have been placed in this group, being quite free from occupational eruptions. 11 Green Shed workmen are also included as follow:-

<u>Sweating Shed Men:-</u>		<u>Group July 1921.</u>	<u>Age.</u>	<u>Length of Service.</u>
John	Ross	(1)	34 yrs.	18 years.
George	Cleland	(1)	32 "	13 "
Robt.	Burns	(1)	37 "	12 "
George	Baxter	(2)	31 "	12 "
James	Stenhouse	(1)	42 "	21 "
James	Peden	(1)	25 "	21 "
James	Christie	(1)	20 "	21 "

Green Shed Workmen:-

John	Raeburn	(1)	57 "	27 "
Hugh	Pettigrew	(2)	55 "	22 "
Alex	Fleming	(3)	58 "	17 "
Hugh	McCrudden	(1)	48 "	17 "
John	Smith	(1)	49 "	12 "
David	MoBeth	(1)	46 "	11 "
Herbert	Hankin	(1)	44 "	10 "
James	MacFarlane	(1)	36 "	10 "
Duncan	McKerracher	(1)	50 "	8 "
John	Thomson	(1)	42 "	8 "
Peter	McVeigh	(1)	35 "	5 "

Group 2. All Green Shed Workmen. This group consists of 12 workmen,

10.8% of those examined, viz.

Joseph	MacLaren	(2)	41 yrs.	22 years.
Michael	Duffin	(3)	55 "	17 "
John	Currie	(3)	51 "	14 "
Thos.	Whitelaw	(2)	44 "	14 "
James	Mooney	(2)	49 "	14 "
Wm.	Pender	(2)	50 "	10 "
George	Rae	(2)	49 "	10 "
Robt.	Powley	(2)	30 "	7 "
James	Crichton	(2)	51 "	5 "
George	Hogg	(1)	39 "	2 "
David	Reeves	(3)	24 "	14 "
Daniel	Docherty	(2)	21 "	14 "

Group 3. Those showing a limited degree of eruption limited in extent.

This group comprises 9 men, 23.1% of those examined, viz.

Alex	McVicar	(2)	45 yrs.	7 $\frac{1}{2}$ years.
James	Gilhooley	(3)	50 "	27 "
Andrew	Gardner	(3)	(March 1921) 51 "	10 "
John	Wylie	(3)	48 "	12 $\frac{1}{2}$ "
John	MacIntosh	(3)	42 "	10 "

George	McGill	(3)	40½ yrs.	7 years.
John	Allan	(2)	28 "	6 "
Phos.	Trowbridge	(3)	32 "	3½ "
Edward	Nicol	(2)	19 "	4 "

The men in this group continue to show decided improvement both in extent and severity of eruptions. Two men have been retained in this group more on account of an old standing acne vulgaris than for occupational eruptions. These men have, however, improved very considerably as regards their acne and at the same time do not suffer more than a slight degree from the typical paraffin conditions.

Group 4. Those with extensive eruptions.

No men have been considered sufficiently affected to be placed in this group, those formerly in group 4 have improved to such an extent that they have been transferred to other groups.

Frequency. March 1919. March 1921. July 1921. October 1921.

Group 1,	35.7%	48.8%	40%	46.1%
" 2,	21.4%	22.0%	37.5%	30.8%
" 3,	38.1%	26.8%	22.5%	23.1%
" 4,	4.8%	2.4%	---	---
	<u>100 %</u>	<u>100 %</u>	<u>100 %</u>	<u>100 %</u>

As all the Sweating Shed workers are now graded group 1, the percentage figures for Green Shed Workmen only are of interest for comparative purposes, hitherto these figures have been supplied in connection with examination of Broxburn Paraffin Shed workers only.

	March 1919.	March 1921.	October 1921.
Group 1,	25.7%	38.2%	34.4%
" 2,	22.9%	26.5%	37.5%
" 3,	45.7%	32.4%	28.1%
" 4,	5.7%	2.9%	.0%
	<u>100 %</u>	<u>100 %</u>	<u>100 %</u>

The improvement in these figures represents actual improvement as men have been transferred to prior groups on showing amelioration in their conditions.

Iterations/

Alterations in grouping since July 1921.

Improvements:- 2 men have been transferred to group 1 from group 2.
1 man has been transferred to group 1 from group 3.
3 men have been transferred to group 2 from group 3.

Deteriorations:- 1 man has been transferred to group 2 from group 1.
3 men have been transferred to group 3 from group 2.

Sites of eruption. Of the 21 men affected, 16 (76.2%) have eruptions on arms and hands only, 3 (14.3%) have eruptions on arms and legs, and 2 (9.5%) have eruptions on arms and trunk.

General Remarks. All the men employed in Paraffin Sheds at date of examination are included in this report with one exception, Joseph Lattery, who was prevented from being present on account of illness. There is a tendency especially of the more aggravated types of occupational conditions towards improvement and it is a point of interest that in those who have papular lesions, the sites vary from time to time, that is, those noted at former examinations have usually disappeared and have been replaced by others in different situations, showing that each individual papule may persist only for a few weeks. The disappearance of each papule is usually co-incident with the centre (practically always a thread-like core representing a dead hair follicle) being shed or expressed, after which healing takes place. An additional point worthy of note is that I have seen very little evidence of recent erythematous dermatitis, and that where that condition has been noted, it was usually an old standing condition, dating back a number of years. Several men who formerly suffered from this condition have been noted as showing "healed erythematous dermatitis".

I wish again to express my satisfaction and thanks to the workmen and all concerned for the help given me in carrying out the examinations.

Alexander Scott
MB ChB

6th Exam.

Dr. Scott.

REPORT on EXAMINATION of WORKERS in
PARAFFIN DEPTS.. PURPHERSTON WORKS.

FEBRUARY, 1922.

EXAMINATION of workmen in Paraffin departments, Pumpherson Works,

February, 1922.

The periodic (quarterly) examination of workmen in paraffin sheds in Pumpherson Works was carried out by me between 7th and 14th Feby. 1922, and the following Report summarises the condition of workmen at that date. As before, the conditions due to employment seen in the Pumpherson workers were comprised under four heads:-

(1) Simple Erythema.

(2) Erythematous Dermatitis.

(3) Papular Dermatitis.

(4) Pastular Dermatitis. All of these conditions have been already described. In addition to these conditions several men were found to be affected with old standing acne vulgaris, which could not be attributed to their working with paraffin products, and which did not appear to be aggravated by such work.

The differentiation into the various groups was again rigidly adhered to:-

Group 1. Those having no eruption due to employment.

" 2. Those having a few papules only.

" 3. Those showing a slight degree of eruption but limited in extent.

" 4. Those having extensive eruption.

In all 39 men were examined, 7 of whom work in the sweating houses, and 32 in or about the Green Sheds. The figures in parenthesis after each man's name represents the group in which he was placed at previous examinations in March, July and October, 1921.

GROUP. 1. Those having no eruption due to employment.

This group comprises 19 men, 48.7% of those examined. All with

exception of the Sweating Shed men have been placed in this Group, being quite free from occupational eruptions. Thirteen Green Shed workmen are also included as follows:-

Sweating Shed Workmen:-

		<u>Group July</u> <u>1921.</u>	<u>Group Octr.</u> <u>1921.</u>	<u>Age.</u>	<u>Length of Service.</u>
Man	Ross.	(1)	(1)	34 yrs.	18 yrs.
George	Cleland.	(1)	(1)	32 "	13 "
Robert.	Burns.	(1)	(1)	37 "	12 "
George	Baxter.	(2)	(1)	31 "	12 "
James	Stenhouse.	(1)	(1)	42 "	23 "
James	Christie	(1)	(1)	20 "	21 "

Green Shed Workmen:-

Man	Raeburn.	(1)	(1)	57½ "	28 "
John	McCrudden.	(1)	(1)	48 "	18 "
James	Mooney.	(2)	(2)	49 "	15 "
Man	Smith.	(1)	(1)	49 "	13 "
James	MacFarlane.	(1)	(1)	36 "	11 "
Robert	Hankin.	(1)	(1)	44 "	11 "
George	Rae.	(2)	(2)	39 "	10½ "
Man	Thomson.	(1)	not exd.	42½ "	9 "
John	McKerracher.	(1)	(1)	51 "	9 "
Robert	Powley.	(2)	(2)	30 "	8 "
James	Crichton.	(2)	(2)	51 "	6 "
Robert	McVeigh.	(1)	(1)	35½ "	6 "
Michael	Docherty.	(2)	(2)	31½ "	2½ "

It must be noted that Duncan McKerracher is still retained in this group, though he was reported to be suffering from paraffin cancer. It is quite certain that the condition was a simple wart, as charted on former occasions, and that this met with some injury while at work, necessitating its removal. At present there is no visible scar as result of its removal. He is otherwise quite free from occupational eruption.

GROUP 2. Those having a few papules only.

This Group consists of 7 workmen, being 18.0% of those examined.

One/

One Sweating Shed workmen is included in this Group.

		<u>Group July,</u> <u>1921.</u>	<u>Group Octr.</u> <u>1921.</u>	<u>Age.</u>	<u>Length of</u> <u>Service.</u>
James	Peden.	(1)	(1)	25 yrs.	3 yrs.

Green Shed Workmen:-

Thomas	Whitelaw.	(2)	(2)	45 "	15 "
John	McIntosh.	(3)	(3)	42 "	11 "
William	Pender.	(2)	(2)	51 "	11 "
Alex.	McVicar.	(2)	(3)	46 "	8 "
George	Hogg.	(1)	(2)	40 "	21 "
David	Tweedie.	not exd.	not exd.	36 "	3 mths.

David Tweedie was employed in Uphall Paraffin Sheds for about 3 years and was examined on two occasions, being included in Group 1 each time. He began work in Pumphreton Sheds after 9 months unemployment.

GROUP 3. Those having a limited degree of eruption.

This Group comprises 12 men, all Green Shed workmen, being 10.7% of those examined.

		<u>Group July,</u> <u>1921.</u>	<u>Group Octr.</u> <u>1921.</u>	<u>Age.</u>	<u>Length of</u> <u>Service.</u>
James	Gilhooley.	(3)	(3)	51 yrs.	28 yrs.
Hugh	Pettigrew. x	(2)	(1)	56 "	23 "
Joseph	MacLaren.	(2)	(2)	41 "	23 "
Alex.	Fleming. x	(3)	(1)	58 1/2 "	18 "
Michael	Duffin. x	(3)	(2)	55 "	18 "
Andrew	Gardiner	(3) (Mar. 1921)	(3)	51 1/2 "	15 "
John	Currie. x	(3)	(2)	52 "	15 "
George	McGill.	(3)	(3)	41 "	7 1/2 "
John	Allan.	(2)	(3)	28 1/2 "	7 "
Thos.	Trowbridge	(3)	(3)	33 "	4 1/2 "
Joseph	Slattery.	(2)	not exd.	36 "	3 "
David	Reeves.	(3)	(2)	24 1/2 "	2 "

Those marked with a x have been temporarily transferred to this Group on account of old standing healed erythematous dermatitis being somewhat aggravated, the arms being slightly more excoriated and

roughened/

roughened than at the date of last examination, a condition commonly seen during Winter months. Apart from this, their condition is not worse there being no recent eruptions. Two men have been retained in this group, on account of extensive acne vulgaris, although their occupational conditions have improved. One man has been transferred to this group on account of acne rosacea of forehead.

Group 4 - Those with extensive eruption:-

One man (2.5% of those examined).

Name.	Group July, 1921.	Group Octr., 1921.	Age Years.	Length of service Years.
John Wylie (Pressman)	(3)	(3)	49	13

This man has also an old standing erythematous dermatitis aggravated by seasonal influences.

Frequency:-

	<u>March, 1919.</u>	<u>March, 1921.</u>	<u>July, 1921.</u>	<u>Octr., 1921.</u>	<u>Feb. 1922.</u>
Group 1,	35.7%	46.8%	40.0%	46.1%	48.8%
Group 2,	21.4%	22.0%	37.5%	30.8%	18.0%
Group 3,	38.1%	26.8%	22.5%	23.1%	30.7%
Group 4,	4.8%	2.4%	-	-	2.5%
	<u>100.0%</u>	<u>100.0%</u>	<u>100.0%</u>	<u>100.0%</u>	<u>100.0%</u>

Frequency in Green Shed Workmen only:-

	<u>March, 1919.</u>	<u>March, 1921.</u>	<u>July, 1921.</u>	<u>Octr., 1921.</u>	<u>Feb. 1922.</u>
Group 1,	25.7%	38.2%	30.3%	34.4%	40.6%
Group 2,	22.9%	26.5%	42.4%	37.5%	18.8%
Group 3,	45.7%	32.4%	27.3%	28.1%	37.5%
Group 4,	5.7%	2.9%	-	0.0%	3.1%
	<u>100.0%</u>	<u>100.0%</u>	<u>100.0%</u>	<u>100.0%</u>	<u>100.0%</u>

Alterations in Grouping since last examination:-

Improvements:- 5 men have been transferred from Group 2 to Group 1.
2 " " " " " Group 3 to Group 2.

Deteriorations:- 1 man has been transferred from Group 1 to Group 2.
2 men have " " " Group 1 to Group 3.
4 men " " " Group 2 to Group 3.
1 man has " " " Group 3 to Group 4.

Bites/

Size of Eruptions:-

Of the 20 men affected, 15 (75%) have eruption on the arms only.
 3 (15%) " " on arms and legs.
 1 (5%) has " on arms and trunk.
 1 (5%) " " on arms and head.

Remarks:- I consider that the present condition of the workmen is very satisfactory and that there is a decided improvement generally in their condition. While this may not be so apparent from the percentage figures, the conditions of those in Groups 3 and 4 as depicted on the charts supplied, compared with those supplied with another report issued at the same time as this, show how very slight the eruptions are. Generally, those in Group 3 may be considered as being just a little short of the standard required for Group 2, the papules in most instances being neither numerous nor large. As is usual at this season, old standing conditions are somewhat aggravated by cold weather, as evidenced by a greater scaliness and wartiness of the arms, followed by improvement during the warmer months.

It is again noteworthy that no fresh erythematous dermatitis has been seen in the departments reported on, and this can be attributed entirely to the precautions taken, such as strict cleanliness and lubrication of the skin with castor oil.

Another point well worthy of comment is the increasing tendency for the occupational eruptions to be limited to the arms only, for, if one man be accepted, there was noted one papule only on the lower extremities throughout the entire examination. In addition to this, what has been described as follicular dermatitis, i.e., destruction of the hair follicles, has improved considerably, being practically absent from the feet and apparent on the hands to a much lessened degree. This improvement may also be attributed to cleanliness and other precautionary measures.

I have already commented on the condition of Duncan McKerracher, and in this connection wish to point out that all conditions, occupational or otherwise, seen during the examinations are marked on the charts. Non-occupational eruptions such as acne, are marked in green, simple warts, sores, callosities (corns), bruises, and/

and similar non-occupational conditions are marked in yellow. These occur on many charts, including several in group 1, as they might be necessary for future reference. Papules and papular dermatitis are marked in blue, erythematous dermatitis in red, and comedones and follicular dermatitis in black.

I wish again to express my thanks to the Management for the facilities given me in carrying out the examination, and the preparedness and help of the workmen are also much appreciated.

Alexander Scott
M.D.

The Firs,
Bruxburn,
17th Feb., 1922.

7th Exam.

Dr. Scott.

REPORT on EXAMINATION of WORKMEN in
PARAFFIN DEPTS., PUMPHURSTON WORKS.

APRIL, 1932.

Examination of Workmen in Paraffin Depts., Pumpharston Works - April, 1922.

The periodic (quarterly) examination of workmen in Paraffin Sheds in Pumpharston Works was carried out by me on 1st and 3rd April, 1922, and the following report summarises the condition of workmen at that date. As before, the conditions due to employment seen in the Pumpharston workers were comprised under four heads:-

- (1). Simple Erythema.
- (2). Erythematous Dermatitis.
- (3). Papular Dermatitis.
- (4). Pustular Dermatitis.

All of these conditions have been already described. In addition to these conditions several men were found to be affected with old standing acne vulgaris, which could not be attributed to their working with paraffin products, and which did not appear to be aggravated by such work.

The differentiation into the various groups was again rigidly adhered to:-

- Group 1 - Those having no eruption due to employment.
- Group 2 - Those having a few papules only..
- Group 3 - Those showing a slight degree of eruption but limited in extent.
- Group 4 - Those having extensive eruption.

In all 40 men were examined, 7 of whom work in Sweating Houses, and 33 in or about the Green Sheds. The figure in parenthesis after each man's name represents the group in which he was placed at previous examination.

Group 1 - Those having no eruption due to employment:-

This group comprises 17 men, 42.5% of those examined. All the Sweating Shed men, being quite free from occupational eruptions, have been placed in this group. Ten Green Shed workmen are also included, as follows:-

(over)

Group 1 - Sweating Shed workmen.

Names.		Group.	Age.	Length of Service.
		Feb. 1922.		
John	Ross	(1)	34	18 yrs.
George	Cleland,	(1)	32	13 "
Robt.	Burns,	(1)	37	12 "
Geo.	Baxter,	(1)	31	12 "
Jas.	Stenhouse	(1)	42	22 "
Jas.	Peden	(2)	25	3 "
Jas.	Christie	(1)	20	21 "

Group 1 - Green Shed Workmen:-

John	Raeburn	(1)	57½	28 "
Hugh	McCrudden	(1)	48	18 "
Wm.	Pender	(2)	51½	11 "
Jas.	McFarlane	(1)	36	11 "
Herb.	Hankin	(1)	44	11 "
George	Rae	(1)	39	10½ "
John	Thomson	(1)	42½	9 "
Duncan	McKerracher	(1)	51	9 "
Peter	McVeigh	(1)	35½	6 "
Daniel	Docherty	(1)	31½	2½ "

Two men being now free from eruption have been transferred to this group from

Group 2.Group 2 - Those having a few papules only:-

This group consists of 12 workmen, being 30% of those examined, and all are

Green Shed workers:-

Joseph	McLaren	(3)	41	23 yrs.
Hugh	Pettigrew	(3)	56	23 "
Thos	Whitelaw	(2)	45	15 "
Jas.	Mooney	(1)	49	15 "
John	Smith	(1)	49	13 "
Alex.	McVicar	(2)	46	8 "
Robt.	Powley	(1)	30	8 "
John	Allan	(3)	28½	7 "
Jas.	Crichton	(1)	51	6 "
Joseph	Slattery	(1)	36	3 "
David	Reeves	(3)	24½	2 "
Ed.	Nicol,	(Not exam'd)	19	1 "

Five men having developed a few papules have been transferred from Group 1, while 4 have improved sufficiently to allow of their transference from Group 3.

Group 3 - Those having a limited degree of eruption:-

This/

This group comprises 10 men, all Green Shed workmen, being 25% of those examined.

		Group -			Length of
Name.		Feb. 1922.	Age.		Service.
James	Gilhooley,	(3)	51	28	yrs.
Alex.	Fleming,	(3)	58½	18	"
Mich.	Duffin	(3)	55	18	"
Andw.	Gardiner,	(3)	51½	15	"
John	Carrie	(3)	52	15	"
Johnston	McIntosh	(2)	48	11	"
George	McGill	(3)	41	7½	"
Thos.	Trowbridge	(3)	33	4½	"
George	Hogg,	(2)	36	2½	"
David	Tweed	(2)	40	3	mths.

Two men have been retained in this group on account of extensive acne vulgaris, though their occupational conditions have improved.

Group 4 - Extensive Eruption:- One Green Shed workman, 2.5% of those

examined:-

John	Wylie	(4)	49	16 yrs.
------	-------	-----	----	---------

Frequency:-

	Mar., 1919.	Mar., 1921.	July, 1921.	Octr., 1921.	Feb. 1922.	Apr. 1922.
Group 1,	35.7%	48.8%	40.0%	46.1%	48.8%	42.5%
" 2,	21.4%	22.0%	37.5%	30.8%	18.0%	30.0%
" 3,	38.1%	26.8%	22.5%	23.1%	30.7%	25.0%
" 4,	4.8%	2.4%	-	-	2.5%	2.5%
	<u>100.0%</u>	<u>100.0%</u>	<u>100.0%</u>	<u>100.0%</u>	<u>100.0%</u>	<u>100.0%</u>

Frequency in Green Shed Workmen only:-

	Mar. 1919.	Mar. 1921.	Octr. 1921.	Feb. 1922.	Apr. 1922.
Group 1,	25.7%	38.2%	34.4%	40.6%	30.3%
" 2,	22.9%	26.5%	37.5%	18.8%	36.4%
" 3,	45.7%	32.4%	28.1%	37.5%	30.3%
" 4,	5.7%	2.9%	0.0%	3.1%	3.0%
	<u>100.0%</u>	<u>100.0%</u>	<u>100.0%</u>	<u>100.0%</u>	<u>100.0%</u>

Alterations in Grouping since last examination:-

Improvements:-	2 men have been transferred from Group 2 to group 1.					
	4	"	"	"	3	"
	"	"	"	"	"	2
Deteriorations:-	5	"	"	"	1	"
	3	"	"	"	2	"
	"	"	"	"	"	3

Sites of Eruptions:-

Of the 23 men affected - 16 (70%) have eruption on arms only.
7 (30%) " " on arms and legs.

Remarks:- While there have been a few changes in the grouping of workmen, generally/

generally the results conform to the average of the figures for all the examinations. No outstanding facts call for comment, but the following points have been noted:-

(1). Some workmen are placed alternately in groups 1 and 2, being free at one examination and at another showing one or two papules, which again disappear.

These workmen may be considered to be more or less immune, as many of them have been employed for considerable periods in Paraffin Sheds, and any appearance of occupational eruption is limited to one or two papules only.

(2). A greater proportion show presence of some form of eruption on feet than at last examination. This is accounted for to some extent by several of those employed for the longest periods, and who having had healed dermatitis of feet, show this condition slightly aggravated, possibly on account of seasonal conditions. This also applies generally to the old standing erythematous dermatitis apparent on the arms of the workmen with the longest periods of service. Both at this and last examination this condition has been somewhat aggravated for the same reason - the redness and scalliness of arms being accentuated.

I have again to express my thanks to the Management for the facilities given, and to the workmen for their interest and help, in carrying out this examination.

The Firs,
Broxburn,
5th Apr., 1922

REPORTS of EXAMINATIONS of BROXBURN OIL COY'S

PARAFFIN SHED WORKMEN.

1st Exam.

Dr. Scott.

REPORT of EXAMINATION of BROXBURN

OIL COY'S PARAFFIN SHED WORKMEN.

FEB., 1919.

REPORT of EXAMINATION of BROXBURN OIL COMPANY'S

PARAFFIN SHED WORKMEN. FEBY.. 1919.

On 1st February, 1919, I received intimation from William Guthbertson, Esq., Manager of Broxburn Oil Coy's Works that, according to agreement between the Superintending Inspector of Factories and the various Oil Companies, it was necessary that all workers in Paraffin Sheds should be examined once at least every quarter by the Certifying Factory Surgeon.

As this intimation was accompanied by a request that such examination should be carried out at an early date, I made a thorough examination of all the Paraffin Shed Workmen in the employment of the Broxburn Oil Coy. between 4th and 13th February last.

I have to submit the following report of the result of this examination.

GENERAL CONDITIONS found on EXAMINATION -

The object of examining Paraffin Workers periodically being to ascertain the skin conditions met with, in the varying degrees of severity, among the workers, and, if necessary, to take steps for their protection. The whole surface of the body was examined by me in every instance, while special attention was paid to the parts known to be most frequently affected, viz., arms and forearms, legs, feet and scrotum. During this examination, the following skin conditions were noted:-

(1) ERYTHEMA. This consists in an inflammatory condition of skin varying in degree from a simple reddening or mottling (hyperaemia) occurring in more or less diffuse patches, to

(2) /

(3) ERYTHEMATOUS DERMATITIS, in which the discoloration is more marked. In this condition there is a tendency to permanent pigmentation of skin, and ultimately to some slight induration of superficial layers of skin, as evidenced by whitish patches, the result of a healed dermatitis. In some of the more chronic cases, there is also a tendency formation of small flat patches of thickening of the horny layers of the skin, giving the appearance of wartiness (verruca plana). This usually occurs in patches about the size of rather less than the area of a threepenny piece, and these are as a rule covered by small blackish scales.

(3) PAPULAR DERMATITIS (Erythema Papulatum). This consists entirely of small reddish or purplish red elevations, pea shaped, flattened on the top, or with a small central depression. The numbers of papules vary from a very few to great numbers distributed all over the affected parts. In some cases these papules occur without erythema, in others they appear with the erythematous dermatitis, while in old standing cases the two conditions are usually associated and co-existent, and in these an eczematous condition is sometimes present, in which the skin is thickened, infiltrated, somewhat elevated or almost horny (eczema scleroeum), with desquamation of superficial layers of skin in fine scales. In a few cases on the tops of the papules are seen small horny excrescences, having the appearance of cutaneous horns. Frequently associated with this papular eruption is -

(4) PUSTULAR DERMATITIS, due to the breaking down of papules, or to the inflammatory process being sufficiently acute to cause destruction of small points of superficial layers of skin. These have the appearance of small boils, with pustular tops.

Sites/

SITES of ERUPTIONS:-

In the great majority of those affected, 94.5%, the backs of hands, or backs and fronts of forearms alone are affected. While every worker affected showed eruption on arms, one only (3.5%) showed any on feet, on the dorsal surface.

The eruption varied from a few papules, usually over back of wrist or inner surface of forearm, to general diffusion over both surfaces of forearm. In old standing cases, it may appear above the elbows, in front and behind. One papule only was seen on eyelid. No eruption of any kind was seen on thighs, scrotum, back, chest or abdomen.

DETAILS of EXAMINATION:-

For descriptive purposes, I have divided the workmen examined into groups, according to freedom from, or extent of, the various eruptions, viz:-

Group 1, men who show no trace of any skin lesion.

Group 2, men who show one or two papules only, not more.

Group 3, men who show papular or erythematous eruptions to a slight degree, the eruption being limited in extent and not diffused.

Group 4, men who have extensive eruptions over arms or legs.

While on several men included in Group 2 there were one or two simple warts only, such as may be seen on any hand, others showed one or two isolated papules, clearly due to contact with paraffin products.

Reference may be made to the detailed description of each man examined, together with chart showing extent of eruption, supplied along with this report.

In every case the name, age, occupation and length of service are/

are given, as reference will be made later to these details in their relation to the prevalence of the skin conditions met with. The Crude Paraffin Wax Department is described as "Green Sheds", while the Refined Paraffin Wax Department is described as "Sweating Sheds".

WORKMEN employed in PARAFFIN SHEDS. GROUPS.

Forty workmen were examined by me, of whom 25 were Green Shed men and 15 Sweating Shed men. Twenty-two of these I have placed in Group 1, there being no skin affection of any kind. The ages of these vary from 24 to 60 years, while the length of service varies from 3½ years to 39 years. The names are arranged according to length of service.

GROUP 1:-

<u>Name.</u>		<u>Age.</u>	<u>Occupation.</u>	<u>Length of Service.</u>
Alex.	Granger,	36	Green Sheds	39 years.
Harry	Brown,	51	Sweating Sheds,	38 "
Henry	Haig,	55	" "	36 "
John	Hastie,	48	" "	30 "
Robert	Miller,	56	" "	34 "
James	McGeown,	38	Green	33½ "
James	Duncan,	53	Sweating	23½ "
William	Black,	45	Green	19½ "
Findlay	Stevenson,	40	Sweating	19 "
Wm.	Sanderson,	35	" "	18 "
John	Cruickshanks,	60	" "	18 "
John	MacKenzie,	39	" "	16 "
Robert	Vannan,	42	" "	16 "
John	Garlick,	49	" "	15 "
John	Stevenson,	29	" "	12 "
William	Anderson,	37	" "	11 "
Alex.	Graham,	29	Green	9 "
Alex.	Wilkie,	26	" "	8 "
David	Wotherspoon,	55	Sweating	6 "
William	Brown,	27	" "	4 "
David	Ballantyne,	59	Green	4 "
James	Dutton,	24	" "	3½ "

These form 55% of employees in Paraffin Sheds.

GROUP /

GROUP 2. A few simple warts or papules, not more than two or three.

<u>Name.</u>	<u>Age.</u>	<u>Occupation.</u>	<u>Length of Service.</u>
John McGeown (3),	59	Green Sheds,	30 years.
Robert Hunter (3),	55	" "	28 "
James King (1),	33	" "	10 "
John Callacher (3),	39	" "	7 "
Chas. Logan, (1),	38	" "	5 "

The numbers in parenthesis represent the number of warts or papules.

This Group forms 12.5% of men employed in Paraffin Sheds.

GROUP 3. Showing slight degree of erythematous or papular dermatitis, localised to confined limits and not diffuse.

Eleven men, varying in age from 29 to 55 years, with length of service from 3½ years to 30 years.

<u>Name.</u>	<u>Age.</u>	<u>Occupation.</u>	<u>Length of Service.</u>
George Dick,	44	Green Sheds,	30 years.
Sam. Miller,	59	" "	30 "
Harry Miller,	58	" "	21½ "
John Gibbons,	43	" "	19 "
John Fairlie,	42	" "	18½ "
David Stewart,	33	" "	13 "
Sam. Stewart,	35	" "	10½ "
William Shaw,	26	" "	5½ "
Chas. B. Logan,	49	" "	4 "
John Nicol,	49	" "	3½ "
Hugh Ballantyne,	29	" " 4 years =	5 "

These form 27.5% of those employed in Paraffin Sheds.

GROUP 4. With marked degree of erythematous and papular dermatitis.

<u>Name.</u>	<u>Age.</u>	<u>Occupation.</u>	<u>Length of Service.</u>
Thos. Jeromeen,	55	Green Sheds.	22½ years.
James Gibbons,	40	" "	5 "

This Group forms 3% of workmen employed in Paraffin Sheds.

Of these two, one is of ruddy fair complexion, freely freckled, and

whose skin is evidently very sensitive to irritation. The other is the subject of chronic psoriasis; in this latter, marked improvement was got within ten days by anti-psoriasis treatment, arsenic internally, and a tar and zinc application.

One man only in Groups 3, 3, and 4, showed an eruption on lower limbs, appearing on the dorsal surface of both feet, and on the legs above the ankles.

GENERAL REMARKS on BROXBURN WORKMEN:-

In every instance inquiry was made as to the habits of cleanliness, both as to body and clothing. With the exception of two, all were very clean in body and clothing. All wash their hands, arms and faces daily on going home. Most try to get a bath when possible, either at home in dwelling house or washing house, or in public baths in town. Though there are baths at the Works (ordinary horizontal baths), they do not care to use them after each other. All are agreed as to the great need for cleanliness. All change their underclothing weekly or fortnightly, oftener if much soiled while at work.

No evidence of specific contagious disease was got.

FREQUENCY. 55% of men are altogether free.

12.5% are only affected to extent of one or two papules.

27.5% are affected in a slight or moderate degree.

5% are markedly affected.

EXCITING CAUSE:-

There can be no doubt but that in every case contact with paraffin oil products, in refined or semi-refined state, is the actual exciting cause. The arms being more exposed, suffer most, while the/

the legs are affected by drops of oil, etc., getting on to clothing, or into boots, etc., while working at the presses or other machinery in the process of treating the oil products generally. The protected parts escape altogether.

PREDISPOSING CAUSES:-

Age cannot be said to have much influence in the causation of eruptions, as many elderly men are quite free, while conversely, the eruptions are just as frequent on young men as on men in middle life. Of those affected, ten are over 40 years of age, and eight are 40 or under.

LENGTH of SERVICE:-

This has very little influence in the causation of paraffin eruptions, as many of the workmen who have been continuously employed in these departments for a considerable number of years are quite free. On the other hand, a number of those with much shorter terms of service are affected. In Groups 2, 3, and 4, seven men (33.8%) have less than 10 years of service, while 11 (51.3%) have over 10 years of service.

OCCUPATION:-

In the cases seen among the Broxburn workmen, those affected all work in the Crude Department, while none of those working in the Sweating Sheds had any eruption. It would seem therefore that there is a greater tendency for those working in the Crude Department to be subject to this condition.

PERSONAL IDIOSYNCRASY:-

Conditions, such as a tendency to some form of skin disease, or hypersensitiveness of skin, must have some bearing as a predisposing/

predisposing cause. In several of the men examined and found to be affected, there was considerable freckling of skin, especially where the complexion was fair, or ruddy fair. This freckling shows a greater tendency to the influence of outside agents, such as heat, or irritants.

CLEANLINESS:-

This must have an important effect in the prevention of formation of eruptions. All the workmen are certainly of the opinion that it is only by great care in keeping skin well washed after contact with the oil products that the skin can be kept free from irritation. The wearing continuously of clothing saturated with oily material also acts prejudicially. In a similar way, it can be easily understood that irritation is readily caused by the oily materials in contact with the hair follicles and gradually getting to the more sensitive layers of skin, through the hair follicles and sweat ducts.

PROGNOSIS:-

Recent eruptions readily disappear on ceasing to work in the Paraffin Sheds. This has been very apparent among men who, after being affected to some extent, had a period of service in the Army, when it disappeared. Eruptions of longer standing also disappear in time, but there is apt to be left some dryness, wartiness or induration of skin. At the same time, though no serious conditions have been noted among the Broxburn workmen, it is not to be assumed that the condition is not worthy of attention. The greatest care must be taken to adopt all the preventive measures possible, and to supervise the workmen at regular intervals.

FACILITIES/

FACILITIES for CLEANLINESS:-

This is very important. I understand that arrangements are in process of being completed for an installation of baths of upright spray type, but that delay has been caused by want of material, etc. The workmen are all prepared to use these, as they understand the necessity for a complete washing of body at frequent intervals.

PROTECTIVE APPLICATIONS:-

The Broxburn workmen all apply a coating of castor oil to the exposed parts of body before beginning work. Paraffin oil and its products are insoluble in this substance, and thus some measure of protection is got. They believe that as well as a preventative influence, there is a curative property as well in removing scales, crusts, etc.

In connection with baths, it might be of importance to ensure a supply of neutral soap, as a strongly alkaline soap has the tendency to remove the outer or more protective layers of epidermis.

The Firm,
Broxburn,
20th Feb., 1919.

2nd Exam.

Dr. Scott.

REPORT of EXAMINATION of BROXBURN OIL COY'S

PARAFFIN SHED WORKMEN.

AUGUST, 1919.

Report on Examination of Broxburn Oil Coy's Green Paraffin Shed
Workmen, August 5th., 1919.

For description of the skin conditions seen, and grouping arrangements, reference may be made to the first report of Examination made on February, 1919.

Twenty-five workers in Green Paraffin Sheds were examined by me on 5th August, 1919, of whom 24 were examined in February, 1919. Throughout the examination, reference was made to the diagrams supplied with first Report, and each man's present condition was compared with his condition in February, 1919, as recorded on chart at that time.

The following Summaries show the results of the present examination of Green Shed Workmen.

Group 1 - Men who show no trace of any skin lesion.

Seven men (28%) were found to be quite free and placed in Group 1.

(NOTE:- In each Group, the figure in parenthesis after each man's name indicates the Group in which he was placed in February, 1919).

Alex.	Grainger,	(1).
James	McGeown,	(1).
Alex.	Wilkie,	(1).
Wm.	Black,	(1).
David	Ballantyne,	(1).
James	Dutton,	(1).
John	Nicol,	(3).

Group 2 - 10 who show only a few papu.

Twelve men (48%) were found to be very slightly affected, and were placed in Group 2.

Robert	Hunter	(2).
John	McGeown	(2).
John	Gallacher	(2).
James	King	(2).
Charles	Logan (A)	(2).
Samuel	Stewart	(3).
David	Stewart	(3).
John	Gibbons	(3).
Wm.	Shaw	(3).
Charles	Logan (B)	(3).
Alex.	Graham	(1).
Henry	Cameron	(not previously examined).

Alex. Graham re-grouped from Group 1 began work in January, 1919, after having served for a period in the Army. He was quite free in February, 1919.

Group 3 - Showing some degree of eruption, limited in extent.

Four men (16%) were placed in this Group.

John	Fairley	(3).
Samuel	Miller,	(3).
Hugh	Ballantyne	(3).
George	Dick	(3).

Group 4 - Men showing extensive eruption.

Two men (8%) were retained in this Group.

Thos.	Jeromeon	(4).
James	Gibbons	(4).

NOTE:- In comparing these percentages with those of first Report, it has to be borne in mind that 15 Sweating Shed Workmen, examined in February, 1919, being quite free from any eruption, were not included in this present examination.

The/

The corrected percentages for Green Shed Workmen only at the date of the first Report, compared with the percentages in the various Groups at the present examination, are as follows:-

	<u>February, 1919.</u>	<u>August, 1919.</u>
Group 1,	28%	28%
Group 2,	20%	46%
Group 3,	44%	16%
Group 4,	8%	8%
	<u>100%</u>	<u>100%</u>

The frequency of skin lesion among Green Shed Workmen, in August, 1919, is therefore:-

Group 1,	28%
Group 2,	46%
Group 3,	16%
Group 4,	8%
	<u>100%</u>

General Remarks:-

Every man showed distinct improvement from his condition in February last, with the exception of one only who had deteriorated. This man resumed work in January, 1919, after some years of service in the Army, and was quite free from eruption in February, 1919.

Six men were so decidedly improved that they were transferred to higher Groups, viz:-

1 from Group 3 to Group 1.
3 " " 3 " " 3.

Eleven men in Groups 2, 3 and 4, in February, 1919, were retained in these Groups, though showing improvement generally.

Two men in Group 4 have been under continuous treatment and observation with distinctly beneficial results.

The/

The men continue to be very clean in body and clothing, realising the great importance of this. All use castor oil smeared over the affected parts before beginning work as a preventative.

With this Report are supplied Charts showing the present condition of the workmen examined.

11th August, 1918.

Dr. Scott.

REPORT on EXAMINATION of WORKMEN in
PARAFFIN DEPTS., BROXBURN WORKS.

MARCH, 1921.

Examination of Workmen in Paraffin Dept., Broxburn Works.

In accordance with arrangements, I carried out the 3rd examination of workmen in Paraffin Dept., Broxburn Works, between 3rd and 10th Mar., 1921, and submit the following report on the conditions of the workmen employed.

The various conditions met with were:-

- (1). Simple Erythema.
- (2). Erythematous Dermatitis.
- (3). Papular Dermatitis.
- (4). Pustular Dermatitis.

These conditions have been fully described in report of Feb., 1919, to which reference may be made for detailed descriptions.

In addition to those conditions incidental to employment, several common skin diseases were observed, such as Acne Vulgaris, Eczema and Psoriasis.

In carrying out the examinations, the condition of each workman was compared with that illustrated on charts accompanying previous reports, to enable a comparative analysis of former and present conditions to be made. Any discrepancy due to changes in personnel between the various examinations will be slight, as only 4 of the men recently examined have not been examined previously, while 2 formerly examined, being no longer employed in the Paraf. Sheds, are not included in the present report.

As before the conditions due to employment were divided into four groups:-

- (1). Those having no eruption due to employment.
- (2). Those having a few papules only.
- (3). Those showing a slight degree of eruption and limited in extent.
- (4). Those showing extensive eruption.

All the workmen in the Paraf. Dept., 42 in number, were examined, 15 of whom work in Sweating Houses, and 27 in or about Green Sheds, and the following summaries show the results of present examination. The figures in parenthesis after each man's name refer to the groups in which he was placed in examination of Feb., 1919, and/or August, 1919.

Group/

GROUP 1 - Free from any condition due to employment.

SWEATING SHED WORKMEN - previously examined Feby., 1919, to which figure in parenthesis refers:-

Name.	Age.	Length of Service.
Henry Haige (1).	59	36 years.
John Hastie (1).	50	32 "
Findlay Stevenson (1)	42	29 "
Robt. Miller (1)	56	26 "
Jas. Duncan (1)	53	27 "
Dt. Wotherspoon (1)	55	24 "
Henry Brown (1)	50	24 "
Jas. Cruickshanks (1)	63	22 "
Wm. Sanderson (1)	37	20 "
Robt. Varnan (1)	44	19 "
John Stevenson (1)	31	17 "
John Garlick (1)	50	14 "
Wm. Anderson (1)	39	12 "
Sam. Currie - not prev. exam	31	10 "
Wm. Brown (1)	30	7 "

GREEN SHED WORKMEN - previously examined Feby. and Augt., 1919:-

Name.	Grp. Feb. 1919	Grp. Augt. 1919.	Age.	Length of service.
Alex. Granger	1	1	59	40 years.
John McGeown,	2	2	60	41 "
Robt. Hunter	2	2	57	31 "
Wm. Black	1	1	43	23 "
Jas. McGeown	1	1	41	22 "
Jas. King	2	2	34	12 "
Chas. Logan(a).	2	2	41	6 "
Dt. Ballantyne	1	1	60	6 "
Jas. Dutton	1	1	26	6 "

This Group, which comprises all the Sweating Shed Men and 9 Green Shed men, represents 57.1% of those employed in Paraffin Sheds. One man, Group 1 Augt., 1919, has been transferred to Group 3, while 4 men have been transferred from Group 2 to Group 1.

Percentage of Group 1, Feb. 1919, 55%; Mar. 1921, 57.1%

Group/

GROUP 2 - Having a few papules only.

Six men (14.3%) all employees in Green Sheds.

Name.		Grp. Feb. 1919.	Grp. Aug. 1919.	Age.	Length of Service.
George	Dick,	3	3	47	31 years.
John	Gibbons,	3	2	46	20 "
Alax.	Graham,	1	2	31	9 "
John	Gallacher,	2	2	41	9 "
Chas.	Logan (b)	3	2	50	6 "
Henry	Cameron,	-	2	29	4 "

One man has been transferred to Group 2 from Group 3. Four men formerly Group 2

have been transferred to Group 1, and 2 men have been transferred to Group 3.

Percentage Group 2, Feb., 1919, 12.5% March, 1921, 14.3%

Lengths of service vary from 31 to 4 years, and ages from 50 to 29 years.

GROUP 3 Having localised eruptions limited in extent.

Nine men, all of whom work in Paraf. Sheds - 21.4% of men employed in Paraf. Dept.

Name.		Grp. Feb. 1919.	Grp. Aug. 1919.	Age.	Length of Service.
Sam.	Millar,	3	3	60	23 years.
Henry	Millar,	3	-	59	22 "
John	Fairlie	3	3	50	19 "
Sam.	Stewart,	3	2	37	12 "
Hugh	Ballantyne	3	3	31	11 "
Wm.	Shaw,	3	2	28	6 "
John	Nichol	3	1	51	5 "
Frank	Graham	Not prev. exam.		23	1 "
Geo.	Paris	do.		19	8 mths.

Two men have been transferred from Group 2, and one in whom the improvement from

Feb. 1919, to Aug., 1919, has not been maintained, has been replaced in Group 3.

Two men not previously examined, with not more than one year's service, are

included in this group, while one man, formerly in this group, has been transferred to Group 4.

Percentage Group 3 - Feb., 1919, 27.5% March, 1921, 21.4%

Lengths of service vary from 23 years to 8 months, and ages from 60 to 19 years.

(over)

GROUP 4 - Having extensive eruption.

Three men (7.1%) of the employees in Paraf. Dept. are included in this group, all of whom work in Green Sheds.

Name.	Grp. Feb. 1919.	Grp. Aug. 1919.	Age.	Length of service.
Thos. Jeromson	4	4	57	23 years.
Ed. Stewart,	3	3	35	15 "
Jas. Gibbons,	4	4	43	8 "

Of these, one has been transferred from Group 3, John Gibbons has improved very considerably, David Stewart and Thos. Jeromson require to be kept under observation.

Frequency:-

(A) in comparison with figures of Feb.. 1919:-

	<u>Feb.. 1919.</u>	<u>March. 1921.</u>
Group 1	55.0%	57.2%
" 2	12.5%	14.3%
" 3	27.5%	21.4%
" 4	5.0%	7.1%
	<u>100.0%</u>	<u>100.0%</u>

(B) Frequency in Green Shed workmen only:- in comparison with figures of Feb. 1919, modified for Green Shed workmen only, and Aug., 1919, referring exclusively to Green Shed Workmen only (workmen in White Sheds were not examined Aug., 1919) -

<u>Group.</u>	<u>Feb., 1919.</u>	<u>Aug., 1919.</u>	<u>Mar., 1921.</u>
1	28%	28%	33.3%
2	20%	48%	22.3%
3	44%	16%	33.3%
4	8%	8%	11.1%
	<u>100%</u>	<u>100%</u>	<u>100.0%</u>

NOTE:- For purposes of comparison with reports on condition of paraffin employees in other Works, these figures refer only to Green Shed workmen; those in Sweating Sheds not having been examined in Aug., 1919, on account of their freedom from paraffin conditions. This differentiation has not been made in other Works in which a proportion of White Shed Workmen are affected.

(over)

Frequency (Cont'd).

These figures show a variation according to the date of examination.

During the winter examinations, 1919, and 1921, the conditions appear relatively worse than in August examination. Future examinations will show with more certainty the seasonable influence on the conditions generally, meanwhile these figures appear to show that while winter conditions do not seem to predispose to eruptions in those previously unaffected, yet the severity is relatively greater during winter than summer.

Site of Eruptions:- Of the 18 men showing some form of paraffin eruption, 11 (61%) have eruption on hands and legs, six (33.3%) have eruption on arms only, one (5.6%) has eruption on legs only.

Alterations in Grouping:-

Improvements:- 4 have been transferred from Group 2 to Group 1.
1 has been transferred from Group 3 to Group 2.

Deterioration:- 1 has been transferred from Group 1 to Group 3.
2 have been transferred from Group 2 to Group 3.

Two men who have been employed in Green Sheds for not over one year have already become affected and are placed in Group 3.

General Remarks:- All those employed in Sweating Sheds continue free from eruption. The workmen, as before, realise the importance of cleanliness, and full advantage is taken of the bathing facilities. The workmen are interested in the routine examination, and have readily given help in carrying this out.

The Firm,
Bromburn,
25th Mar., 1921.

Alexander Scott
M.B.L.M.

Dr. Scott.

REPORT on EXAMINATION of WORKERS in
PARAFFIN DEPTS., BROXBURN WORKS.

OCTOBER, 1921.

Examination of Workmen in Paraffin Departments, Broxburn Works.

October, 1921.

The periodic (quarterly) examination of workmen in Paraffin Sheds in Broxburn Works was carried out by me between 3rd and 10th October 1921, and the following report summarises the condition of workmen at that date.

As before, the conditions due to employment seen in the Broxburn workers were comprised under four heads:-

- (1) Simple Erythema.
- (2) Erythematous Dermatitis.
- (3) Papular Dermatitis.

(4) Pustular Dermatitis. All of these conditions have been already described.

The differentiation into the various groups was again rigidly adhered to:-

- Group 1, Those having no eruption due to employment.
- " 2, Those having a few papules only.
 - " 3, Those showing a slight degree of eruption but limited in extent.
 - " 4, Those having extensive eruption.

In all 34 men were examined, 12 of whom work in the Sweating Houses, and 22 in or about the Green Sheds. The figure in parenthesis after each man's name represents the group in which he was placed at previous examination in March, 1921.

Group 1. Those having no eruption due to employment.

This group comprises 22 men, 64.7% of those examined. All the Sweating Shed men (12) have been placed in this group, being quite free from occupational eruptions. 10 Green Shed workmen are also included as follow:-

Group 1. Those having no eruption due to employment.

<u>Sweating Shed Men:-</u>		<u>Group March 1921.</u>	<u>Age.</u>	<u>Length of Service.</u>
Robert	Miller	(1)	58 yrs.	28 years.
James	Duncan	(1)	53 "	27 "
Henry	Haige	(1)	59 "	36 "
John	Hastie	(1)	50 "	32 "
Henry	Brown	(1)	50 "	24 "
David	Wotherspoon	(1)	55 "	24 "
J.	Cruickshanks	(1)	63 "	22 "
John	Stevenson	(1)	51 "	17 "
John	Garlick	(1)	50 "	14 "
Wm.	Sanderson	(1)	37 "	20 "
William	Brown	(1)	30 "	7 "
George	Donald	not previously exd.	27 "	2 "

Green Shed Workmen:-

Alex	Granger	(1)	60 "	41 "
John	McGeown	(1)	60 "	41 "
Robert	Hunter	(1)	58 "	31 "
George	Dick	(2)	47 "	31 "
James	McGeown	(1)	42 "	22 "
James	King	(1)	35 "	12 "
Alex	Graham	(2)	32 "	9 "
James	Dutton	(1)	26 "	6 "
John	Nicol	(3)	52 "	5 "
Frank	Graham	(3)	23 "	1 "

Two men have been transferred from group 2 to this group and 2 from group 3.

Group 2. Those having a few papules only.

This group comprises 9 men, 26.5% of those examined.

Henry	Miller	(3)	60 yrs.	22 years.
John	Giboens	(2)	46 "	20 "
John	Fairley	(3)	51 "	19 "
John	Gallacher	(2)	41 "	9 "
Charles	Logan	(2)	41 "	6 "
David	Ballantyne	(1)	61 "	6 "
Wm.	Shaw	(3)	29 "	6 "
Henry	Cameron	(2)	30 "	4 "
George	Paris	(3)	20 "	8 months.

One man previously group 1 has been included in this group, while 4 have been transferred from group 3.

Group 3. Having localised eruption limited in extent.

4 men comprise this group, being 6.0% of those examined.

Samuel	Miller	(3)	61 yrs.	23 years.
Hugh	Ballantyne	(3)	32 "	11 "

Group 4. Those having extensive eruption.

One man only forms this group, being 2.8% of those examined.

Thomas Jeromson (4) age 58 years. 23 years Service.

Frequency. (A), In comparison with figures for Feby. 1921, and March 1921.

	February 1919.	March 1921.	October 1921.
Group 1.	55.0%	57.2%	64.7%
" 2.	12.5%	14.3%	26.5%
" 3.	27.5%	21.4%	6.0%
" 4.	5.0%	7.1%	2.8%
	<u>100 %</u>	<u>100 %</u>	<u>100 %</u>

The difference between figures for March 1921 and October 1921 will be referred to later, under "Remarks". The above figures are comparable in all details with those given for other works, as they include both Sweating and Green Shed workmen. In report for March 1921 comparative percentages were given for Green Shed workmen only, as an examination of these workmen was made in August 1919, omitting the Sweating Shed workers. On these lines the figures for Green Shed workmen only are as follows:-

	Feby. 1919.	August 1919	March 1921.	October 1921.
Group 1.	28.%	28.%	33.3%	45.5%
" 2.	20.%	48.%	22.3%	41.0%
" 3.	44.%	16.%	33.3%	9.0%
" 4.	8.%	8.%	11.1%	4.5%
	<u>100%</u>	<u>100%</u>	<u>100 %</u>	<u>100 %</u>

Sites of eruptions. All the twelve men affected show eruption on arms and hands only, the appearance of early stage of eruption on ulnar aspects of forearms being quite typical.

Alterations in grouping since March 1921.

Improvements:- 2 have been transferred from group 2 to group 1.
2 have been transferred from group 3 to group 1.
4 have been transferred from group 3 to group 2.

Deterioration:- 1 has been transferred from group 1 to group 2.

General remarks:- All those affected are workers in or about Green Sheds. The percentage figures for the various groups, and under

Frequency */

"Frequency" show a very marked improvement on those of previous examinations, this being due to the fact that those employed in Paraffin Sheds have been at their work in these departments for a period of about three weeks only, (at date of examination), after an interval of several months during which they were not employed in Paraffin Shedd departments. On their ceasing work in these departments the earlier types of eruption (papules) gradually disappeared, so that in about three to four weeks they were quite free. There was no further return of occupational eruptions until work was resumed and within a space of three weeks from date of resumption the papules recurred to the extent noted in charts accompanying present report. The earlier indication of the reappearance was noted in from ten to twelve days.

The more chronic types of eruption (erythematous dermatitis) also show marked improvement, in some instances having totally disappeared.

The improvement in the figures relating to the more advanced conditions (group 4) is not an actual improvement, to the extent indicated as one workman who has hitherto always ^{been} included in this group is not at present employed in Paraffin Sheds, and is therefore not included in the present report. It is also of interest that no eruptions have been noticed on legs or feet so far, these being more protected than the arms.

The workmen concerned continue to take all precautions as regards cleanliness etc., to obviate the occurrence of eruptions as far as possible. I have to express my appreciation of the help given me by workmen and all concerned in carrying out the examinations.

Alexander Scott
per Ben

The Firm,
 Broxburn.
 9th Nov., 1921.

REPORTS of EXAMINATIONS of OAKBANK OIL COY'S

PARAFFIN SHED WORKMEN.

1st Exam.

Dr. Scott.

REPORT on EXAMINATION of OAKBANK OIL COY'S

PARAFFIN SHED WORKMEN.

APRIL, 1919.

APRIL. 1919.

REPORT ON EXAMINATION OF OAKBANK OIL COY'S
PARAFFIN SHED WORKMEN.

In accordance with instructions from A. C. Thomson, Esq., Manager of Oakbank Oil Coy. and H. M. Superintending Inspector of Factories, that all workers in the Paraffin Sheds had to be examined at least once every quarter by the Factory Surgeon, the first examination of these workmen was made during April, 1919, and I have to submit the following report of the result of this examination.

The object of examining the Paraffin Shed Workers periodically being to ascertain the skin conditions met with in the varying degrees of severity among the workers, and if need the steps required for their protection. A general examination of the whole body was made, but more especially the parts known to be most frequently affected, viz:- The arms and hands, scrotum, legs and feet, more rarely the face and neck. The following conditions were noted:-

1. ERYTHEMA:- This, strictly speaking, means nothing more than superficial redness of the skin disappearing on pressure, that is to say, a local congestion of the skin, occurring in more or less diffuse patches, at first active, but should the irritating cause persist it soon becomes passive due to vaso-motor paralysis. The colour of the affected skin, at first bright red, changed to a dull red/

red deepening in colour to livid blue or purple as the blood stream becomes more and more sluggish in its passage through the affected parts, should the inflammatory process subside, there is pigmentation and branny desquamation in proportion to the severity of the inflammatory process.

3. ERYTHEMATOUS DERMATITIS:- In this stage, the discoloration of the skin is more pronounced with the tendency to permanent pigmentation of the skin, and ultimately to a certain amount of induration of the superficial layers of the skin, the whitish patches seen in some cases being the cicatrices of the healed dermatitis. In some chronic cases there is a tendency to the formation of small flatish patches of the thickenings of the horny layers of the skin, giving a warty appearance.

3. PAPULAR ERYTHEMA:- Is characterised by an eruption of raised somewhat flattened spots varying in size from a pin head to a fourpenny piece or larger of an irregular rounded form, with a well defined margin, at first of a red colour, but soon takes on a violet hue, especially in the centre. They may subside after some weeks, if so, they usually leave behind red pigmental desquamating spots, which at time completely disappear. The papules occur in some cases with a marginal erythema, in others without any erythema, while in old standing cases the two conditions are frequently combined, and in some of these there is a eczematous condition, in which the skin is thickened, infiltrated and somewhat elevated, and almost horny with desquamation of the superficial layers of the skin in fine scales. In some few cases horny excrescences or callosities may be seen on the tops of the papules, having the appearance of cutaneous horns/

A further degree of irritation transforms the papule into an inflammatory vesicle, which is an elevation of the skin, containing a more or less clear liquid, a still further degree of irritation converts the vesicle into a pustule, which is an elevation of the skin containing pus.

SITES OF ERUPTIONS:-

In 15 men (50%) the eruption was confined to the upper extremities, hands and forearms.

In 2 men (6.6%) on upper extremities, hands, forearms, and back of neck.

In 2 men (6.6%) on one, both hands, forearms, both feet; in the other both forearms and both feet.

DETAILS OF EXAMINATION:- For descriptive purposes, the workmen examined are divided into four groups according to freedom from or extent of eruption, etc.

Group 1 showing no trace of skin lesion.

Group 2 showing a slight erythema or a few small papules, or a very slight admixture of the two forms.

Group 3 showing an erythema of greater extent, but not diffuse, with a few papules of limited proportions and non-inflammatory.

Group 4 showing extensive eruptions, papules, but with no inflammatory or suppurating pustules.

On/

On several men in Group 2 there were warts of an ordinary character having no relation to the Paraffin type; others had one two papules clearly due to the contact with Paraffin products. Reference may be made to the detailed description of each man examined and chart showing extent of his eruption, supplied with the report. In every case the name, age, occupation and length of service are given, as references will be made later to these details in their relation to the prevalence of the skin conditions met with.

The Crude Paraffin Wax Department is described as Green Sheds while the refined department is described as Sweating Sheds.

WORKMEN EMPLOYED IN PARAFFIN SHEDS. GROUPS.

Thirty workmen were examined, five of whom working in the Sweating Sheds and twenty-five in Green Sheds. Eleven of these have been placed in Group 1, there being no skin affection of any kind. The ages of workmen in this Group vary from 19 to 58 years, while their lengths of service vary from 9 months to 30 years. The names are arranged according to length of service:-

GROUP 1:- MEN WHO SHOW NO TRACE OF SKIN LESION:-

Name.	Age.	Occupation.	Length of Service.
George Shaw,	58	Green Sheds.	30 years.
Alex. Russell,	53	Sweating Sheds.	27 "
James Ovens,	46	Green Sheds.	20 "
Michael Burns,	41	" "	19 "
Ramsay Fowler,	40	" "	16 "
William McBain,	35	" "	13 "
George Adams,	33	Sweating Sheds.	11 "
William Marr,	36	" "	8 "
James Adams,	32	" "	8 "
Samuel Fox,	33	Green Sheds.	6 "
James McGill,	19	" "	9 months.

These form 36.6% of employees in the Paraffin Sheds.

GROUP 2:- SHOWING A SLIGHT ERYTHEMA, OR A SMALL PAPULE, OR A VERY SLIGHT ADMIXTURE OF THE TWO FORMS:-

Name.	Age.	Occupation.	Length of Service.
James Toall,	32	Green Sheds.	8 years.
Peter Cross,	37	" "	6 "
Charles Tripp,	32	" "	6 "
Donald Roseburgh,	28	" "	5 "
Thomas Flynn,	23	" "	4 "
Thomas McLuckie,	25	" "	2 "

These form 30% of the men employed in the Paraffin Sheds.

GROUP 3. SHOWING AN ERYTHEMA OF GREATER EXTENT BUT NOT DIFFUSE, WITH A FEW PAPULES OF LIMITED PROPORTIONS AND NON-INFLAMMATORY.

	<u>Name.</u>	<u>Age.</u>	<u>Occupation.</u>	<u>Length of Service.</u>
Alex.	McCrae,	65	Green Sheds(Fitter)	20 years.
James	McKie,	55	Sweating Sheds	15 "
John	Drysdale,	45	Green Sheds	15 "
Thos.	Dalziel,	47	" "	10 "
Pat.	Killoran,	55	" "	6 "
David	Jarvis,	56	" "	6 "
Robt.	Ovens,	33	" "	4 1/2 "
Thos.	Burns,	46	" "	4 "
Thos.	McGregor,	35	" "	3 1/2 "
John	Whitelaw,	29	" "	3 "

These form 33.3% of men employed in Paraffin Sheds.

GROUP 4. SHOWING EXTENSIVE ERUPTIONS. PAPULES BUT WITH NO INFLAMMATORY OR SUPPURATING PUSTULES.

	<u>Name.</u>	<u>Age.</u>	<u>Occupation.</u>	<u>Length of Service.</u>
John	Braid,	66	Green Sheds.	30 years.
Pat.	Lynch,	45	" "	22 "
Robt.	Smith,	55	" "	14 "

These form 10% of the men employed in Paraffin Sheds.

Remarks:- Frequency, 50% of the workmen are altogether free from any signs of paraffin eruption.
 6.6% are affected to a very slight extent.
 20% " " " a moderate extent.
 10% " " " a more marked degree.

Note:- Of the workmen examined at Oakbank 5 men out of 30 were Sweating Shed Workers; the remainder (25) being Paraffin Shed Workers.

Exciting Cause:- There can be no doubt that the actual exciting cause is due to contact with the paraffin oil product during its manufacture from the crude to the refined condition; the arms being more exposed suffer most, while the legs and feet being to a certain extent protected/

Cleanliness:- This is the most important preventative both as regards the person and the clothing; the skin and clothes must be well washed and kept free from all traces of irritation. This attention to cleanliness is exhibited in a marked degree in the men examined.

Prognosis:- Recent eruptions readily disappear on ceasing work in the Paraffin Sheds and using appropriate soothing treatment.

Eruptions, etc., of more severity and longer standing also disappear in time leaving small white cicatrices some scaly dryness of the skin, and the remains of small warts more or less numerous in proportion to the severity of the previous inflammatory condition.

Cases in Group 4 are always serious, but with proper personal and appropriate soothing treatment we see no cause to suspend any man meantime. In one case had the man been younger or even more robust, I would have advised a surgical operation, after which I believe we could have placed him in Group 3.

Facilities for Cleanliness:- A complete installation of baths is required, together with lockers and conveniences for keeping clothing in good condition, and arrangements for drying wet clothes. The wearing of clothing saturated with oily products continuously should be prohibited.

Protective Applications:- Castor oil is used by some workmen as a protective for their arms, etc., exposed while at work. It forms to a certain extent a protective covering and helps to prevent the irritative action of the paraffin products on skin which it helps to keep soft.

3rd Exam.

Dr. Scott.

REPORT on EXAMINATION of WORKMEN in
PARAFFIN DEPTS., OAKBANK WORKS.

MARCH, 1921

Examination of Workmen in Paraffin Dept., Oakbank Works.

In accordance with arrangements, I carried out the third examination of workmen in paraffin depts., Oakbank Works, between 1st and 22nd March, 1921, and submit the following report on the conditions of the workmen employed. The various conditions met with were:-

- (1). Simple Erythema.
- (2). Erythematous Dermatitis.
- (3). Papular Dermatitis.
- (4). Pustular Dermatitis.
- and
- (5). Comedones (Blackheads) of an occupational type.

The first 4 of these conditions have been already described in report of April, 1919. The 5th condition has been added, as 7 men have areas of skin varying in size closely packed with large comedones (blackheads), and in situations in which they are not normally found. A brief description will suffice to make the condition readily understood.

COMEDONES of occupational type:-

These occur in parts exposed to contact with the paraffin products, especially over flexures and posterior aspects of elbows, on tops of shoulders and over shoulder blades. They are larger than the blackheads met with in ordinary circumstances, more closely packed together, and are not accompanied by the same tendency to supuration and formation of acne. They are easily removed by pressure, the outer layers are firm and pigmented. They are due to obstruction of sebaceous ducts, either with foreign material or thickening of superficial layers of epidermis at outlet of ducts. That they are occupational may be accepted as a fact, as they are practically never found in the situations mentioned otherwise, or so closely packed, and moreover the frequency of this condition among the workmen leads to the same conclusion. Contact with tars and paraffin products has been mentioned by leading dermatologists as of importance in their causation.

In addition to these conditions, common skin diseases, such as acne and eczema/

lesions were observed.

In carrying out the examination, the condition of each workman who had been previously examined was compared with that illustrated on the charts with the first report. To enable a comparative analysis of his present and former condition to be made, but almost half the workmen examined who have been employed in the Paraf. Sheds under 2 years, have been examined recently for the first time.

As before the conditions due to employment were divided into four groups:-

- (1). Those having no eruption due to employment.
- (2). Those having a few papules only.
- (3). Those showing a slight degree of eruption and limited in extent.
- (4). Those showing extensive eruption.

Fortysix workmen were examined, being all those employed in the Paraf. Sheds with one exception. Six of these work in the Sweating Houses and 40 in the Green Sheds, and the following summaries show the result of present examination.

The figure in parenthesis after names shows grouping under 1919 report.

GROUP 1 - Free from any condition due to employment:-

17 workmen (37%) of those examined, 5 of whom work in the Sweating Sheds:-

Name.	Grp.	Age.	Length of service, Years.
	1919.		
Alex. Russell	1	55	29
George Adams	1	35	13
Mr. Marr	1	39	10
Wm. Adams	1	33	9
Mr. Philip - not prev. examined		38	2

and 12 are employed in the Green Sheds:-

Geo. Stein	1	60	32
Ramsay Fowler	1	42	18
Mr. Macbain,	1	37	14
Wm. Toall	2	34	10
Wm. Fox	1	35	8
Wm. McGill	1	21	25
Mr. Quigley - not prev. examd.		46	1 1/4
Wm. Waddell	do.	48	1
David Waddell	do.	24	1
Chris. Todd,	do.	28	1
Mr. Murdoch	do.	26	1
John Brand	do.	26	1 month.

(over)

Percentage of Group 1, April, 1919, 36.6%

March, 1921, 37%

One man Group 2, Apl. 1919, has been transferred to this group. Six of those in this group have less than 2 years service.

GROUP 2 - having a few papules only:-

8 men (17.4%) of those examined, all work in the Green Sheds.

Name.	Grp.	Apl.	Age.	Length of service,
		1919.		Years.
Alex.	McGras	3	67	22
Alex.	Robertson - not prev. examd.		40	14
David	Jarvis	3	58	8
Peter	Croes	2	39	8
Thos.	Burns	3	49	6
Jas.	Wilson - not prev. examd.		38	1
Thos.	Secular do.		55	1
M.	Weatherburn, do.		39	9 mths.

Percentage of Group 2, April, 1919, 20%

March, 1921, 17.4%

Three men have been transferred from Group 3, four men have not been previously examined by me. Lengths of service vary from 9 months to 22 years (3 men with not over one year's service are included in Group 2). Ages vary from 38 to 67 years.

GROUP 3 - having localised eruptions limited in extent.

This group consists of 19 men (41.3%) of those examined, all of whom work in the Green Sheds, with the exception of

Jas. Mackie, 3 59 17 years. (Sweating Sheds).

Green Shed Workmen:-

Jas.	Ovens	1	48	22
David	Roseburgh	2	30	7
Robt.	Ovens	3	33	6½
Jos.	Macgregor	3	37	5½
John	Whitelaw	3	31	5
Thos.	McLuckie	2	27	4
Robt.	Mackay - not prev. examd.		38	3
Jas.	Eland, do.		52	1½
Colin	Robertson do.		25	1½
Wm.	Hogg do.		28	1½
John	Motion do.		26	1½
Murdoch	Ross do.		30	1½
Jas.	Robertson, do.		21	1
Geo.	Glencorse, do.		56	1
L.	Edwardson, do.		44	1
Thos.	Peffers, do.		31	1
	do. do.		22	1

Percentage Group 3, April, 1919, 20% March, 1921, 41.3%

The ages vary from 56 to 21 years; the lengths of service from 22 years to 1 year. It is to be noted for comment later in this report that 11 of the men included in this Group have not been employed in Oakbank Paraf. Dept. for more than 1½ years, and none of these were examined by me in any other Work during 1919 examinations.

GROUP 4 - Having extensive eruption:-

Two men (4.3%) of those examined, both workers in the Green Shed Dept.

Archd.	Wallace - not prev. exam'd.	34	16 years.
Thos.	Dalziel (Grp. 3, 1919)	48	12 "

Percentage Group 4, April, 1919, 10% March, 1921, 4.3%

Frequency:- Compared with April, 1919.

	April, 1919.	March, 1921.
Group 1,	36.6%	37.0%
" 2,	20.0%	17.4%
" 3,	33.3%	41.3%
" 4,	10.1%	4.3%
	<u>100.0%</u>	<u>100.0%</u>

These figures show an improvement in Groups 1, 2, and 4, while more men are Graded Group 3 than formerly.

Site of eruption:- Of the 29 men affected, 18 men show eruption on the arms and legs, (62.0%), and this figure includes 11 men who have not been employed for more than a year and a half. Eleven show eruption on arms only (34.5%), one has eruption on leg only (3.5%).

Alterations in grouping from April, 1919:-

Improvements:- 1 man has been transferred from Group 2 to Group 1.
3 men have " " " " 3 to " 2.

Deteriorations:- 1 man has been transferred from Group 1 to Group 3.
2 men have " " " " 2 to " 3.

i.e., of the men who were examined in April, 1919, four have improved somewhat, and three have deteriorated.

(over)

REMARKS:- Twenty men have been employed in the Green Sheds under 2 years. Of these, 6 are free from eruption due to employment, 14 are affected, 3 slightly and 11 to a greater extent, and it is noteworthy that these 11 have eruption on arms and legs. As the proportion of recently employed workmen affected seems to be large, this, in conjunction with the eruptions of blackheads as already described, and the prevalence of eruption on hands and legs, was specially enquired into to ascertain a probable cause. It cannot be attributed to youthfulness, as 6 of the 11 men referred to are over 30 years of age, while on the other hand 6 of those recently employed and free from eruption are under 30.

From information supplied, it seems that boracic acid solution, carbolic acid solution, and lysol diluted with water or glycerine, have been used for applying to arms and legs as antiseptics to prevent formation of eruptions. Lysol which is a preparation of cresylic acid, soap, and alcohol in solution, however diluted, unless to such an extent as to have no antiseptic value, acts as an irritant and readily destroys the superficial layers of skin; carbolic solutions have the same tendency, and it may just be possible that, by injuring the superficial layers of skin by their daily use paraffin products, get access to the less resisting deeper layers of skin, thus causing prevalence of eruptions. In addition, it may be possible that blackheads are encouraged by blocking of the ducts with debris from the superficial layers of skin.

Comedones (Blackheads):- These also call for special comment, as they should if possible be removed before nature tries to get rid of them by suppuration. The affected parts should be steamed or bathed with hot water. The blackheads are then squeezed out between the fingers (not by using any mechanical appliance such as a watch key or scoop) and when finished the parts should be bathed with cold water. They may have to be expressed on subsequent occasions, as the ducts readily fill up again, but after treatment for a short time should ultimately disappear.

(over)

The workmen in the other Works believe in the efficiency of castor oil, both as an emollient and on account of its insolubility in the paraffin series, as the best preventative, so far as is known, for paraffin eruptions.

I propose to pay a visit informally, in a few weeks time, to the Paraffin Dept. of Oakbank Works to see whether any alteration has been effected in the condition of the men by these suggestions. Due notice will be given of this.

Alexander Scott
M.B. Cur.

The Firm,
Broxburn,
29th Mar., 1921.

October, 1921.

Dr. Scott.

REPORT on EXAMINATION of WORKERS in
PARAFFIN DEPTS., OAKBANK WORKS.

OCTOBER, 1921.

Examination of Workmen in Paraffin Departments, Oakbank Works.

October, 1921.

The periodic (quarterly) examination of workmen in Paraffin Sheds in Oakbank Works was carried out by me between 3rd and 10th October, 1921, and the following report summarises the condition of workmen at that date.

As before, the conditions due to employment seen in the Oakbank workers were comprised under five heads:-

- (1) Simple Erythema.
- (2) Erythematous Dermatitis.
- (3) Papular Dermatitis.
- (4) Pustular Dermatitis.
- (5) Occupational Acne.

These have been described in detail on former occasions.

The differentiation into the various groups was again rigidly adhered to:-

- Group 1. Those having no eruption due to employment.
- " 2. Those having a few papulae only.
- " 3. Those showing a slight degree of eruption but limited in extent.
- " 4. Those having extensive eruption.

In all 40 men were examined, 7 of whom work in the Sweating Houses, and 33 in or about the Green Sheds. The figure in parenthesis after each man's name represents the group in which he was placed at previous examination in March, 1921.

Group 1. Those having no eruption due to employment.

This group comprises 20 men, 50.0% of those examined. All the Sweating Shed men have been placed in this group, being quite free from occupational eruptions. 13 Green Shed workmen are also included as follows:-

<u>Heating Shed Workmen:-</u>		<u>Group March 1921.</u>	<u>Age.</u>	<u>Length of Service.</u>
Alex	Russell	(1)	55 yrs.	29 1/2 years.
Alex	McCrae	(2)	67 "	22 1/2 "
James	McKie	(-)	59 "	17 1/2 "
George	Adams	(1)	35 "	13 1/2 "
William	Marr	(1)	38 "	10 1/2 "
James	Adams	(1)	33 "	9 1/2 "
William	Philip	(1)	38 "	2 1/2 "

Green Shed Workmen:-

George	Shaw	---	60 "	32 1/2 "
James	Ovens	(3)	48 "	22 1/2 "
Alex	Robertson	(2)	40 "	14 1/2 "
Wm.	McBain	(1)	37 "	14 1/2 "
Wm.	Quigley	(1)	46 "	1 1/2 "
Chris.	Todd	(1)	28 "	1 1/2 "
James	Waddell	(1)	48 "	1 1/2 "
Wm.	Waddell	(1)	24 "	1 1/2 "
Wm.	Scoular	(2)	55 "	1 1/2 "
James	Weatherburn	(2)	39 "	1 1/2 "
James	Mowbray	not prev. exd.	20 "	2 months.
John	Sewell	" " "	25 "	2 weeks.
Wm.	Johnstone	" " "	19 "	4 days.

men have been transferred from group 2 and one has been transferred from group 3, to group 1. 5 men in above list were not examined in March 1921.

Group 2. Those having a few papules only. All Green Shed Workmen.

This group consists of 10 men, being 25% of those examined.

Thomas	Dalziel	(4)	48 yrs.	12 1/2 years.
Wm	Fox	(1)	35 "	8 1/2 "
David	Jarvis	(2)	58 "	8 1/2 "
Thomas	Burns	(2)	49 "	6 1/2 "
Joseph	MacGregor	(3)	37 "	6 1/2 "
William	Hogg	(3)	28 "	1 1/2 "
Thomas	McCluckie	(3)	27 "	4 1/2 "
Murdoch	Ross	(3)	30 "	1 1/2 "
Wm	Edwardson	(3)	44 "	1 1/2 "
Wm.	Murdoch.	(1)	26 "	1 1/2 "

Four men included in this group have less than 2 years service.

Group 3. Showing localised eruption limited in extent.

This group consists of 10 green shed workers, being 25% of the total number of workmen examined.

John	Wallace.	(4)	34 years.	16 years.
Robert	Cross	(2)	39 "	8 "
Robert	Ovens	(3)	33 "	7 "
John	Whitelaw	(3)	31 "	5 "
Robert	MacKay	(3)	38 "	3 "
John	Motion	(3)	26 "	1 "
James	Brand	(3)	52 "	1 "
William	Robertson	(3)	25 "	1 "
Thomas	Paffere	(3)	31 "	1 "
James	Robertson	(3)	21 "	1 "

It has to be noted that five men are included in this group who had less than two years service in paraffin departments.

Group 4. Those having extensive eruption.

No men are sufficiently affected to be included in this group.

Two men formerly comprising this group have sufficiently recovered to be transferred to group 2 and 3.

Frequency. (A). In comparison with figures for March 1919 and March 1921.

	April 1919.	March 1921.	October 1921.
Group 1.	36.6%	37.0%	50.0%
" 2.	20.0%	17.4%	25.0%
" 3.	33.3%	41.3%	25.0%
" 4.	10.1%	4.3%	0.0%
	<u>100 %</u>	<u>100 %</u>	<u>100 %</u>

The difference between figures for March and October 1921 will be commented on later, under "Remarks".

(B). Frequency in Green Shed workmen only.

As all the workers in Sweating Sheds are now graded group 1 the percentage figures for the Green Shed workmen only are of interest for comparative purposes, hitherto these figures have been supplied with report on Roxburn paraffin shed workers only.

	Feb'y. 1919.	March 1921.	October 1921.
Group 1.	28.0%	30.0%	39.4%
" 2.	24.0%	20.0%	30.3%
" 3.	36.0%	45.0%	30.3%
" 4.	12.0%	5.0%	0.0%
	<u>100 %</u>	<u>100 %</u>	<u>100 %</u>

Sites of eruption:- Of the 20 men affected with some form of occupational eruption, 12 (60%) have eruption on arms only, 1 (5%) on trunk and arms, (25%) have eruption on arms and legs, and 2 (10%) have eruption on trunk only.

Alterations in grouping since March 1921.

Improvements. 4 men have been transferred from group 2 to group 1.
1 man has been transferred from group 3 to group 1.
5 men have been transferred from group 3 to group 2.
1 man has been transferred from group 4 to group 2.
1 man has been transferred from group 4 to group 3.

Deteriorations. 2 men have been transferred from group 1 to group 2.
1 man has been transferred from group 2 to group 3.

Remarks:- All those affected are workers in or about the Green Sheds. The percentage figures for the various groups and under "Frequency" show a considerable improvement on those of previous examinations, due to the fact that those employed in Paraffin Departments have been at their work in sheds for a few weeks only, (at date of examination) after an interval of several months during which they were not employed in paraffin sheds. Generally speaking the recent eruptions disappeared after ceasing work and reappeared in a short time after resuming work to the extent noted in the various charts accompanying this report. The condition described in report for March 1921 as occupational acne (blackheads) has much improved, one man only has not improved in this respect. This condition should be readily removed with a little care in expressing the blackheads before they cause suppuration on the lines suggested in March, 1921.

Nine men with less than two years service are included in groups two and three, these having a recurrence of the typical "papules" very shortly after resuming work in Paraffin Sheds.

The workmen realise the importance of cleanliness and full advantage appears to be taken of the facilities in this respect.

Alexander Scott
M.B.L.

5th Exam.

Dr. Scott.

REPORT on EXAMINATION of WORKERS in
PARAFFIN DEPTS., OAKBANK WORKS.

FEBRUARY, 1922.

Dept.	Exam. Date	Exam. Time	Age	Length of Service
Paraffin	2/1	10:30	25	10
Paraffin	2/1	11:30	25	10
Paraffin	2/1	12:30	25	10
Paraffin	2/1	1:30	25	10
Paraffin	2/1	2:30	25	10

The periodic (quarterly) examination of workmen in Paraffin Sheds in Oakbank Works was carried out by me between 9th and 12th Feby., 1922, and the following report summarises the condition of workmen at that date. As before, the conditions as to employment seen in the Oakbank workers were comprised under five heads:-

- (1). Simple erythema.
- (2). Erythematous dermatitis.
- (3). Papular dermatitis.
- (4). Pastular dermatitis.
- (5). Occupational acne.

These have been described in detail on former occasions.

The differentiation into the various groups was again rigidly adhered to:-

- Group 1:- Those having no eruption due to employment.
- Group 2:- Those having a few papules only.
- Group 3:- Those showing a slight degree of eruption, but limited in extent.
- Group 4:- Those having extensive eruption.

In all, 41 men were examined, 6 of whom work in the Sweating Houses, and 35 in or about the Green Sheds. The figures in parenthesis after each man's name represents the group in which he was placed at previous examinations in March and Octr., 1921. As the October examination was made after a period of cessation of work, during which the men improved considerably, the group figures relating to the March examination have been given as well, to make comparison between the results of the various examinations more equal.

Group 1 - Those having no eruption due to employment:-

This Group comprises 12 men, 29.3% of those examined. Five of the Sweating Shed men have been placed in this group, being quite free from occupational eruptions. Seven Green Shed workmen are also included as follows:-

Group 1 (A) Sweating Shed Workmen:-

Name.	Group March, 1921.	Group Octr., 1921.	Age, Years.	Length of Service Years.
Alex. Russell,	(1)	(1).	56	30
George Adams,	(1)	(1)	36	14
William Marr,	(1)	(1)	38	11
James Adams,	(1)	(1)	34	10
William Philips,	(1)	(1)	39	3

101:- Alex. McCrae was described as a Sweating Shed worker in last report, now described as a Green Shed worker. He has been transferred to Group 4, and his condition will be commented on under "Remarks".

Group 1 (B) Green Shed Workmen:-

Name.	Group March, 1921.	Group. October, 1912.	Age Years.	Length of Service Years.
George Shaw,	-	(1)	60	33
James Owens,	(3)	(1)	49	23
James Fowler,	(1)	-	42	19
W. Quigley,	(1)	(1)	47	21 $\frac{1}{2}$
James Waddell,	(1)	(1)	49	2
Geo. Dignan	(3) Not prev. examd.		23	2
W. Murdoch	(1)	(2)	27	11 $\frac{1}{2}$

The man being now free from occupational eruption has been transferred to this Group from Group 2, while 3 men, formerly in Group 1, have been transferred to Group 2, and 3 men, being more extensively affected, have been removed from Group 1 and placed in Group 3.

One man Group 3 in March, 1921, and not examined Octr., 1921, has been placed in Group 1.

Group 2 - Those having a few papules only:-

This group consists of 8 men, being 19.5% of those examined. All included in this group are Green Shed Workmen.

Name.	Group March, 1921.	Group Octr., 1921.	Age Years.	Length of Service, Years.
Alex. Robertson,	(2)	(1)	41	15
Peter Cross	(2)	(3)	40	9
John Whitelaw,	(3)	(3)	32	6
Robt. MacKay,	(3)	(3)	39	4
W. Hogg,	(3)	(2)	29	21 $\frac{1}{2}$
Thos. Secular,	(2)	(1)	56	2
John Sewell,	-	(1)	26	6 months.
Andw. Martin,	- Not prev. examined.		37	2 months.

Three men in this group having deteriorated somewhat have been transferred from Group 3 and placed in Group 2. Three men in this group have less than 2 years service in Paraffin Sheds.

Group 3 - Those having localized eruptions limited in extent:-

This/

This group comprises 15 men, being 36.6% of those examined, one only being a painting Shed worker, viz:-

	Group March, 1921.	Group Octr., 1921.	Age Years.	Length of Service. Years
James McKie	(Not exam.)	(1)	60	18

This man has been transferred from Group 1, on account of the presence of a slight degree of occupational eruption.

Green Shed Workmen:-

Thos.	Dalziel	(4)	(2)	49	13
Sam.	Fox,	(1)	(2)	36	9
Joseph	McGregor,	(3)	(2)	38	6½
Thos.	McCluckie,	(3)	(2)	28	5
C.	Robertson,	(3)	(3)	26	2½
James	Brand,	(3)	(3)	53	2½
Gavin	Waddell,	(1)	(1)	24	2
J.	Robertson,	(3)	(3)	22	2
Chris.	Todd,	(1)	(1)	29	2
L.	Edwards,	(3)	(2)	45	2
M.	Weatherburn,	(2)	(1)	40	1½
James	Mowbray,	Not exam.	(1)	21	8 months.
M.	Johnstone,	Not exam.	(1)	20	6 months.
Jas.	Gillon,	Not exam.	Not exam.	42	3 months.

Five of the above men were in Group 1 at Octr. examination, and 5 were in Group 2, thus 10 men who are included in this group have deteriorated since last examination. Compared with the examination of March, 1921, one man has improved, 3 men who were in Group 1 at that time are now graded Group 3, while one graded Group 2 has now been placed in Group 3, thus, compared with March, 1921, there has been an actual deterioration. It is to be noted that included in above list are 8 men who have not been paraffin shed workers for a longer period than 2 years..

Group 4 - Those with extensive eruption.

This group comprises 6 men, 14.6 of those examined. All are Green Shed workmen.

Name.	Group March, 1921.	Group Octr., 1921.	Age Years.	Length of service, Years.
Alex. McCrae,	(2)	(1)	68	23
Archd. Wallace,	(4)	(3)	35	17
David Jarvis,	(2)	(2)	59	9
Robt. Owens,	(3)	(3)	34	7½
John Motion,	(3)	(3)	27	2½
Wm. Stark,	Not exam.	Not exam.	33	3 months.

In March, 1921, this group consisted of 2 men, and in Octr., 1921, none.

One man (McCrae) has been transferred from Group 1, on account of the presence of a number of recent large papules on backs of arms, and an especially large flat papule, on left arm, proceeding to abscess formation. One man (Jarvis) has been transferred from Group 2 on account of a warty papule to inside of right ankle larger than usual, which must be kept under observation. Another (Wallace) was in Group 4 in March 1921, and though he is not worse since that date, had deteriorated somewhat since Octr. last. Three men, Owens, Motion and Stark are also included in this group on account of the extent of their eruptions. It is to be noted that John Motion has been employed in Paraffin Sheds for only $2\frac{1}{2}$ years, and Wm. Stark for 3 months, the latter having an extensive crop of very large papules.

Frequency:-

	April, 1919.	March, 1921.	Octr., 1921.	Feby., 1922.
Group 1,	36.6%	37.0%	50.0%	29.3%
Group 2,	20.0%	17.4%	25.0%	19.3%
Group 3,	33.3%	41.3%	25.0%	36.6%
Group 4,	10.1%	4.3%	0.0%	14.6%
	<u>100.0%</u>	<u>100.0%</u>	<u>100.0%</u>	<u>100.0%</u>

These figures show some deterioration from those for March, 1921, and considerable deterioration from those for Octr., 1921. In April, 1919, 43.4% of those examined were included in Groups 3 and 4, 45.6% in March, 1921, 25% in Octr., 1921, while at the present date 51.2% are included under the same groups.

Frequency in Green Shed workmen only:-

	Feby., 1919.	March, 1921.	Octr., 1921.	Feby., 1922.
Group 1,	28.0%	30.0%	39.4%	20.0%
Group 2,	24.0%	20.0%	30.3%	23.0%
Group 3,	36.0%	45.0%	30.3%	40.0%
Group 4,	12.0%	5.0%	0.0%	17.0%
	<u>100.0%</u>	<u>100.0%</u>	<u>100.0%</u>	<u>100.0%</u>

Sites of eruptions. Of the 29 men affected with occupational eruptions -

6	have some form of eruption on arms only,	20.7%
2	" " " " " " on arms & head,	6.9%
21	" " " " " " on arms and legs,	73.4%

At March, 1921, examination, 62% had eruptions on arms and legs, the results of present examination thus showing an increasing tendency for the eruptions to be more

distributed.

Alterations in grouping since last examination (Octr.. 1921):-

Improvements:-

1 man has been transferred from Group 2 to Group 1.
3 men have been transferred from Group 3 to Group 2.

Deteriorations:-

3 men have been transferred from Group 1 to Group 2.
5 " " " " " " 1 to Group 3.
1 man has been " " " 1 to Group 4.
5 men have been " " " 2 to Group 3.
1 man has been " " " 2 to Group 4.
3 men have been " " " 3 to Group 4.

Fifteen men have been retained under their previous groups, while 4 have not been previously examined.

Remarks:- In carrying out the present examination, several facts have been noted as being of sufficient importance to merit special comment.

(1). It will be obvious from the foregoing figures that instead of there being any visible improvement, there is actually an increase in the occupational eruptions, both as regards number of men affected and the extent of eruptions. The factors which may be considered as contributing to this result are (A) Season, (B) Cleanliness, and (C) Idiosyncrasy.

(A) Season. Experience has shown that in examinations carried out in Winter months, the percentage figures of those affected are usually somewhat worse than in the Summer examinations, as it is readily understood that prolonged cold has an effect in lowering the vitality of the skin. This, however, is more apparent in connection with the condition described as erythematous dermatitis, recent or old standing, in which the inflammatory condition is accentuated, and in the more chronic types the skin gets more excoriated and scaly during the Winter months.

It cannot be said with the same certainty that papular eruptions generally are more prevalent or more severe during cold weather, and in any case the present examination does not compare favourably with that of March, 1921, which may be considered as one of the Winter examinations. This is borne out by the results of the examination of Pumpherson workmen carried out at the same time as

the present examination.

At present more men have papular eruptions than formerly, and these are also more widespread than in March last, and this is confined to the Oakbank workmen only, so that seasonal influence cannot be held to account for the increase.

Cleanliness. While cleanliness is of great importance, all the workmen examined appear to make full use of facilities provided, so that it is impossible therefore to conclude that varying degrees of cleanliness can fully account for the increase in numbers of those affected, or for the varying degree of severity.

Idiosyncrasy. I have on former occasions stated that idiosyncrasy appears to play a very important part as a predisposing cause, and this seems to be corroborated by the present figures. Of those with not more than $2\frac{1}{2}$ years service in Paraffin Sheds, and working under exactly similar conditions, 4 are quite free (Group 1), 4 are very slightly affected (Group 2), 10 are affected to a slightly greater extent (Group 3), while 2 are very extensively affected, and one of these has been in paraffin sheds for 3 months only. The charts for those in Groups 2 and 3 having the lengths of service stated may be compared with those of a similar length of service in Group 4, as these illustrate diagrammatically the conditions. The importance from a practical standpoint of the recognition of idiosyncrasy as a predisposing cause is that by a process of selection it should be ultimately possible at least to limit the extent of the eruptions, and also possibly the numbers of those affected.

(2). The prevalence of eruptions on feet would seem to show that under working conditions, the men are more exposed to drips of oily products on feet and lower parts of legs than elsewhere, e.g. 73.4% are thus affected, 15.1% of Pumpherston men are similarly affected.

(3). The condition described in March last as occupational comedones shows a decided improvement, this can certainly be attributed to care being taken to express/

express blackheads; only slight evidence of this condition was got at present examination.

(4). The alteration in Alex. McCrae's condition is marked (engineman, age 68, 23 years service). In April, 1919, he was graded Group 3, March, 1921, Group 2, October Group 1, being then quite free, and at present group 4. It would appear that at his age his power of resistance must be lessened, while his recuperative power must be correspondingly impaired, so that it might reasonably be anticipated that improvement in his condition might be slow.

I have to express my thanks to Management for the facilities given, and to the workmen for their increased interest and help, in carrying out the present examination.

Alexander L. H.
W. B. L.

The Firm,
Hexburn,
17th Feb., 1922

The quarterly examination of workers in the Paraffin Works in the United States was carried out by me on the 1st of April, 1922, following which I examined the condition of workers at that time. As before the workers in the Paraffin Works were employed under five hours.

6th Exam.

- (1). Organized men.
- (2). Single workers.
- (3). By the number of workers.
- (4). Regular workers.
- (5). Part-time workers.

of which have been recorded in detail in the following.

The Dr. Scott group from the Paraffin Works was again examined.

—

Group 1. These having no workers due to employment.

2. These having a few workers only.

REPORT on EXAMINATION of WORKERS in

PARAFFIN WORKS. OAKBANK WORKS.

In all, 17 men were examined, 1 of whom was the Paraffin Worker.

—

There are about the same number, but I did not examine the Paraffin Worker at the

end of last APRIL, 1922. The Paraffin Worker is not yet in the

Paraffin Works, but he was in the Paraffin Works at the end of Feb., 1922.

GROUP 1 - These having no workers due to employment.

This group consists of men, 17 of whom were examined, 1 of whom was in the Paraffin Works, and 16 were in the Paraffin Works.

GROUP 1 - These having no workers due to employment.

Name.		Group	Age	Length of Service.
		1-2, 1922.		
John	Russell,	(1)	36	14 yrs.
George	Adams	(2)	32	14 "
John	Hart	(3)	32	14 "
John	Adams	(4)	34	10 "
John	Phillips	(5)	33	1 "

examination of the Workmen in Paraffin Sheds, Oakbank Works - April, 1922.

The quarterly examination of workmen in the Paraffin Sheds in Oakbank Works was carried out by me on 1st and 2nd April, 1922, and the following report summarises the condition of workmen at that date. As before the conditions due to employment were comprised under five heads:-

- (1). Occupational Acne.
- (2). Simple Erythema.
- (3). Erythematous Dermatitis.
- (4). Papular Dermatitis.
- (5). Pustular Dermatitis.

all of which have been described in detail on former occasions.

The differentiation into the various groups was again rigidly adhered to -

- Group 1. Those having no eruption due to employment.
" 2. Those having a few papules only.
" 3. Those showing a slight degree of eruption of limited extent.
" 4. Those showing extensive eruption.

In all, 40 men were examined, 6 of whom were working in the Sweating Houses, 33 in or about the Green Sheds, and 1 who was employed in the Green Sheds at the date of last examination. The figure in parenthesis after each man's name represents the group in which he was placed at previous examination of Feb., 1922.

Group 1 - Those having no eruption due to employment:-

This group comprises 15 men, 37.5% of those examined, 5 of whom work in the Sweating Sheds, and 10 work in Green Sheds.

Group 1 - Sweating Shed Workmen:-

Name.	Group Feb. 1922.	Age.	Length of Service.
Alex. Russell,	(1)	56	30 yrs.
George Adams	(1)	36	14 "
Wm. Marr	(1)	38	11 "
Jas. Adams	(1)	34	10 "
Wm. Phillips	(1)	39	3 "

(over)

Group 1 - Green Shed Workmen.

	Name.	Group Feb. 1922.	Age.	Length of Service.
George	Shaw	(1)	60	33 yrs.
James	Ovens	(1)	49	23 "
James	McGill	(Not exam'd)	22	3 "
Wm.	Murdoch	(1)	27	21 "
Wm.	Quigley	(1)	47	24 "
James	Waddell	(1)	49	2 "
David	Waddell	(3)	24	2 "
Don.	Hutton	(Not exam'd)	40	1 month.
Jas.	Lockertie	(Not exam'd)	54	1 "
Wilson	Quigley	(Not exam'd)	18	1 week

One man being now free from eruption has been transferred to this group from group 3, while 4 have not been examined previously.

Group 2 - Those having a few papules only:-

This group consists of 12 men, being 30% of those examined, one

Swetting Shed man is included, viz.,

James	McKie,	(3)	59	18 yrs.
-------	--------	-----	----	---------

Group 3 - Green Shed Workmen:-

Peter	Cross	(2)	40	9 yrs.
Sam.	Fox	(3)	36	9 "
Robt.	Ovens	(4)	35	7 1/2 "
Thos.	Burns	Octr. 21st (2)	50	7 "
John	Whitelaw	(2)	32	6 "
Robt.	MacKay	(2)	39	4 "
Colin	Robertson	(3)	36	2 1/2 "
Wm.	Hogg	(2)	29	2 1/2 "
Thos.	Saunders	(2)	56	2 "
Chas.	Dignan	(1)	23	2 "
John	Gawell	(2)	26	6 months.

One man has been transferred to this group from group 4; 3 men have been transferred from group 3, and one has been transferred from group 1.

Group 4 - Those having localized eruptions to a limited extent:-

This group comprises 12 men, all Green Shed Workers, 30% of those

examined/

Group 3 - All Green Shed Workers:-

Name.	Group	Feb. 1922.	Age.	Length of service.
Thos. Delisle	(3)		48	13 yrs.
David Jarvis	(4)		59	9 "
Joseph McGregor	(3)		38	6 1/2 "
Thos. Malachuk	(3)		28	5 "
John Motion	(4)		27	2 1/2 "
Jas. Robertson	(3)		22	2 "
L. Edwardson	(3)		45	2 "
H. Weatherburn	(3)		40	1 1/2 "
Wm. Stark	(4)		33	3 months, now Labr. at Stills.
Jas. Mosbray	(3)		21	9 months.
Jas. Gillon	(3)		43	4 "
Andr. Martin	(2)		40	3 "

One man having deteriorated since last examination has been transferred from Group 2; two men having improved have been transferred from group 4, one of whom (John Motion) has been off work for a week or thereabouts through a slight accident; the other (Stark) has left Paraf. Sheds and now works at Stills, with consequent improvement.

Group 4 - Those with extensive eruption:-

One Green Shed worker, 2.5% of those examined.

Archi.	Wallace	(4)	35	17 yrs.
--------	---------	-----	----	---------

Four men formerly Group 4 having improved considerably have been transferred to Groups 2 and 3, while Alex. McCrae was not examined, being no longer employed about Green Sheds. (It would be advisable for me to see this man next examination).

Trend:-

	April, 1919.	March, 1921.	Octr. 1921.	Feb. 1922.	April, 1922.
Group 1,	36.6%	37.0%	50.0%	29.3%	37.5%
" 2,	20.0%	17.4%	25.0%	19.3%	30.0%
" 3,	33.3%	41.3%	25.0%	36.6%	30.0%
" 4,	10.1%	4.3%	0.0%	14.8%	2.5%
	<u>100.0%</u>	<u>100.0%</u>	<u>100.0%</u>	<u>100.0%</u>	<u>100.0%</u>

These figures show marked improvement on those for Feb. 1922, at which date of those examined 51.4% were included in Groups 3 and 4. Twenty-five% of those examined in Octr. 1921, after stoppage of work for some months, were included in Groups 3 and 4, 43.6% in the same groups in Mar., 1922, while the present examination shows that 32.5% only are included in these groups.

Frequency - Green Shield Workmen only:-

	April, 1919.	March, 1921.	Oct., 1921.	Feb. 1922.	Apr. 1922.
Group 1.	28.0%	30.0%	39.4%	20.0%	39.4%
" 2.	24.0%	20.0%	30.3%	23.0%	32.3%
" 3.	36.0%	45.0%	30.3%	40.0%	35.3%
" 4.	12.0%	5.0%	0.0%	17.0%	3.0%
	<u>100.0%</u>	<u>100.0%</u>	<u>100.0%</u>	<u>100.0%</u>	<u>100.0%</u>

It will be noted that at the present examination 38.3% are included in groups 3 and 4, compared with 57% in Feb. 1922.

Sites of Eruptions:- Of the 25 men affected with occupational eruptions,

6 have some eruption on arms only (24%).

19 " " " on arms and legs (76.0%)

In Feb. 1922, 73.4% had some form of eruption on arms and legs, therefore the present examination shows a slightly increased tendency for the legs to be affected.

The eruptions on feet vary, the commonest type being a follicular dermatitis, consisting of destruction of the hair follicles, which become filled with skin debris and dirt, and clusters of little black points are seen in the positions usually occupied by hairs. The condition is of little importance, apart from the fact that it is most prevalent round the ankles and over the extensor tendons of the toes, the latter position corresponding exactly to the position of the boot laces when boots are fixed on the feet. The inference is therefore that the feet are intimately in contact with moist paraffin scale, the oily material percolating over the tops of boots and through the lacing parts. Papules were also frequently seen around ankles.

Alterations in Grouping since last examination:-

Improvements:- One man has been transferred from Group 3 to Group 1.

Three men have " " " " 3 to Group 2.

One man has " " " " 4 to Group 2

Three men have " " " " 4 to Group 3.

Deteriorations:- One man has been transferred from Group 1 to Group 2.

One " " " " " " 2 to Group 3.

Twenty-six men have been retained in the previous groups, while four have not been previously examined.

(over)

Report:-

The results of this examination show an improvement on the conditions of the men since last examination. While this is apparent from the percentage figures, most of those men who have been retained in their former groups also show an improvement, the eruptions not being so extensive, several having papular dermatitis in healing or almost healing state. This, however, does not appear under the various figures until improvement has occurred to the extent which permits transference from one group to another, but nevertheless it can be said with certainty that at present the general tendency collectively and individually is towards improvement.

I have pleasure in recording the great help given me by the workmen, by their preparedness, celerity, and interest, and to the Management for the facilities provided, in carrying out the examination.

Alexander Scott
M.B.

The Firm,
Brockburn,
4th Apr., 1922.

REPORTS of EXAMINATIONS of YOUNG'S OIL COY'S

UPHALL PARAFFIN SHED WORKMEN.

Dr. Scott.

REPORT of EXAMINATION of YOUNG'S OIL
COY'S UPHALL PARAFFIN SHED WORKMEN.

FEBY., 1919.

REPORT of EXAMINATION of YOUNG'S OIL COY'S UPHALL PARAFFIN SHED

WORKMEN. FEBRUARY. 1919.

On 5th February, 1919, I received intimation from W. M. Wilson, Esq., Manager of Uphall Works of Young's Paraffin Light & Mineral Oil Coy., Ltd., that, according to agreement between the Superintending Inspector of Factories and the various Oil Companies, it was necessary that all workers in Paraffin Sheds should be examined once at least every quarter by the Certifying Factory Surgeon. As this intimation was accompanied by a request that such examination should be carried out at an early date, I made a thorough examination of all the Paraffin Shed Workmen in the employment of Young's Oil Coy. between 5th and 13th February last.

I have to submit the following Report of the result of this examination:-

GENERAL CONDITIONS found on EXAMINATION:-

The object of examining Paraffin Workers periodically being to ascertain the skin conditions met with, in the varying degrees of severity, among the workers, and, if necessary, to take steps for their protection, the whole surface of the body was examined by me in every instance, while special attention was paid to the parts known to be most frequently affected, viz., arms and forearms, legs, feet and scrotum. During this examination, the following skin conditions were noted -

(1) ERYTHEMA. This consists in an inflammatory condition of skin, varying in degree from a simple reddening or mottling (hyperaemia) occurring in more or less diffuse patches to

(2) ERYTHEMATOUS DERMATITIS, in which the discoloration is more marked. In this condition there is a tendency to permanent pigmentation of skin and ultimately to some slight induration of superficial layers of skin, as evidenced by whitish patches, the result of a healed dermatitis. In some of the more chronic cases, there is also a tendency formation of small flat patches of thickening of the horny layers of the skin, giving the appearance of wartiness (*verruca plana*). This usually occurs in patches about the size of rather less than the area of a threepenny piece, and these are as a rule covered by small blackish scales.

(3) PAPULAR DERMATITIS (ERYTHEMA PAPULATUM). This consists entirely of small reddish or purplish red elevations, pea shaped, flattened on the top, or with a small central depression. The numbers of papules vary from a very few to great numbers distributed all over the affected parts. In some cases these papules occur without erythema, in others they appear with the erythematous dermatitis, while in old standing cases the two conditions are usually associated and co-existent, and in these an eczematous condition is sometimes present, in which the skin is thickened, infiltrated, somewhat elevated or almost horny (*eczema sclerosum*), with desquamation of superficial layers of skin in fine scales. In a few cases on the tops of the papules are seen small horny excrecences, having the appearance of cutaneous horns. Frequently associated with this papular eruption is -

(4) PUSTULAR DERMATITIS, due to the breaking down of papules, or to the inflammatory process being sufficiently acute to cause destruction of small points of superficial layers of skin. These/

These have the appearance of small boils, with pustular tops.

EPITHELIOMA. A malignant epitheliomatous growth was seen, due to a wart or papule having taken on rapid growth and showing all the features of epitheliomatous cancer.

SITES of ERUPTIONS:-

In eleven of those affected (55%), the backs of hands or back and front of forearms alone are affected. While every worker affected but one showed eruption on arms, 9 showed eruption on both hands and feet (45%), and one man (5%) showed eruption on feet only. The eruption varies from a few papules usually over back of wrist or inner surface of forearm to general diffusion of arm. In old standing cases it was seen above the elbows, in front and behind. No eruption was seen on chest, back or abdomen. One had a slight eruption on scrotum.

DETAILS of EXAMINATION:-

For descriptive purposes, I have divided the workmen examined into groups according to freedom from, or extent of eruption, viz., -

- Group 1. Men who show no trace of any skin lesion.
- Group 2. Men who have one, two, or three papules, not more.
- Group 3. Men who show any eruption to a slight degree, limited in extent and not diffused.
- Group 4. Men who have extensive eruptions over hands, legs or both.
- Group 5. Any showing presence of warty growths malignant or becoming so.

On several men included in Group 2, there were warts of ordinary character, such as may be seen on any hand, others had one or two isolated papules clearly due to contact with paraffin products.

Reference/

Reference may be made to the detailed description of each man examined and chart showing extent of his eruption, supplied with this report.

In every case the name, age, occupation and length of service are given, as reference will be made later to these details in their relation to the prevalence of the skin conditions met with. The Crude Paraffin Wax Department is described as "Green Sheds", while the Refined Paraffin Wax Department is described as "Sweating Sheds".

Workmen employed in Paraffin Sheds, Group A.

Thirty-six men and one woman were examined by me, of whom 18 were Green Shed men, and 19 Sweating Shed workers. Seventeen of these I have placed in Group 1, there being no skin affection of any kind. The ages of these vary from 18½ to 63 years, while the length of service varies from 3 months to 43 years. The names are arranged according to length of service.

<u>Group 1.</u>	<u>Name.</u>	<u>Age.</u>	<u>Occupation.</u>	<u>Length of Service.</u>
Alex.	Aitken,	54 yrs.	Sweating Sheds.	43 years.
John	Stein,	45 "	" "	33 "
John	Gariner, Jr.	44 "	" "	29 "
John	Campbell,	38 "	" "	18 "
Geo.	Morris,	36 "	Green Sheds.	16 "
Alex.	Tullis,	32 "	" "	14 "
Archd.	Brownlee,	46 "	Sweating Sheds.	13 "
Maxwell	Caine,	51 "	Green Sheds.	12½ "
Pat.	Boyle,	47 "	" "	9 "
David	Twedy,	32 "	" "	6 "
Jas.	Goodall,	38 "	Sweating Sheds.	4 "
Wm.	Linton,	18½ "	" "	1½ "
Jas.	McCardle,	47 "	Green Sheds,	1½ "
Geo.	Beattie,	36 "	Sweating Sheds,	1 "
Andw.	Young,	45 "	Breem "	1 "
Geo.	Wemyss,	31	Sweating "	3 months.
Margt.	Morner,		" "	

These form 46% of employees in Paraffin Sheds.

Group 2. a few Simple Warts or Papules, not more than two or three.

<u>Name.</u>		<u>Age.</u>	<u>Occupation.</u>	<u>Length of Service.</u>
Chas. McRoddien,	(1)	51 yrs.	Green Sheds.	30 years.
Thos. Anderson,	(3)	39 "	" "	20 "
Alex. Aitken,	(1)	33 "	Sweating Sheds.	18 "
James Armour,	(3)	36 "	" "	4 "

The numbers in parenthesis represent the number of warts or papules. This Group forms 10.8% of men employed in Paraffin Sheds.

Group 3. showing slight degree of Erythematous or papular dermatitis, localised to confined limits and not diffuse. Eight men, varying in age from 23 to 55 years, with length of services from 1 year to 55 years:-

<u>Name.</u>		<u>Age.</u>	<u>Occupation.</u>	<u>Length of Service.</u>
James Stein.		59	Sweating Sheds.	55 years.
Duncan Darroch,		59	" "	37 "
Thos. Norris,		31	" "	18 "
Arthur Mulholland,		47	" "	18 "
Joseph Howie,		63	" "	12 "
David McGrath,		33	Green	7 1/2 "
Wm. Slater,		33	" "	1 "
Wm. Stanley,		39	" "	1 "

These form 31.8% of these employed in Paraffin Sheds.

Group 4. with marked degree of Erythematous and Papular Dermatitis.

<u>Name.</u>		<u>Age.</u>	<u>Occupation.</u>	<u>Length of Service.</u>
Dan. Smellie,		69	Sweating Sheds.	39 years.
Alex. Cannon,		51	Green	34 "
Magnus Shearer,		50	" "	28 "
Dennis Houston,		66	" "	27 "
John Boyle,		44	" "	18 "
James Boyle,		49	" "	18 "
Robert Mitchell,		33	" "	4 months.

This Group forms 18.9% of the workmen employed in the Paraffin Sheds

One or two are somewhat freckled, and of fair complexion, and whose skin is somewhat sensitive to irritation. The ages of men in this Group vary from 33 to 69 years, and length of service from

four months to 32 years. One man who has worked in the Crude Department for three or four months only was extensively affected. Of the others, with lengths of service from 18 to 38 years, three showed signs of old extensive eruption in an almost healed condition, without sign of any recent development.

Group 5. One man, John Gardner, aged 73 years with 30 years service in Sweating Sheds showed a large papillomatous growth, evidently malignant, or becoming so. He was suspended from work in order to have his arm attended to.

REMARKS:-

Nine men out of the 36 examined show eruption on legs as well as arms, in all cases but two, on the dorsal surface of feet. One had an eruption on thighs, another on front and back of legs below knee. In no instance was there any eruption on trunk. A number of those who had been employed for a long period showed clearly evidence of former extensive eruptions healed, as if healing had occurred under improved conditions.

CLEANLINESS:-

Generally there was room for greater cleanliness among the men. Many admitted that they seldom or never had a full bath, as the facilities both at home and in the works are not favourable.

Practically all the men change their underclothing weekly or fortnightly.

No evidence of specific contagious disease was got.

FREQUENCY:-

46% of men are altogether free.

10.8% are only affected to extent of one or two papules.

31.6% /

21.6% are affected in a slight or moderate degree.

18.9% are markedly affected.

One man showed an epitheliomatous growth.

EXCITING CAUSE:-

There can be no doubt but that in every case contact with paraffin oil products, in refined or semi-refined state, is the actual exciting cause; the arms being more exposed, suffer most, while the legs are affected by drops of oil, etc., getting on to clothing, or into boots, etc., while working at the hydraulic presses or other machinery in the process of treating the oil products generally.

PREDISPOSING CAUSES:-

Age cannot be said to have much influence in the causation of eruptions, as many elderly men are quite free, while conversely, the eruptions are just as frequent on young men as on men in middle life. Of those affected, 13 are over 40 years of age, while 2 are 40 or under.

LENGTH OF SERVICE:-

This may have some slight influence in the causation of paraffin eruptions, as many of the workmen who have been continuously employed in these departments for a considerable number of years are quite free. On the other hand, a number of those with much shorter terms of service are affected. In Groups 2, 3, 4, and 5, five men (25%) have less than 10 years of service, while 11 (75.1%) have over 10 years of service.

OCCUPATION:-

In the cases seen, 11 of those affected work in the Crude Department. Nine of those working in the Sweating Sheds show an eruption. It would seem therefore that there is a/

a greater tendency for those working in the Crude Department to be subject to this condition.

PERSONAL IDIOSYNCRASY:-

Conditions such as a tendency to some form of skin disease, or hypersensitiveness of skin, must have some bearing as a predisposing cause. In several of the men examined and found to be affected, there was considerable freckling of skin, especially where the complexion was fair, or ruddy fair. This freckling shows a greater tendency to the influence of outside agents, such as heat or irritants.

CLEANLINESS:-

This must have an important effect in the prevention of formation of eruptions. All the workmen profess that they know that only by great care in keeping skin well washed after contact with the oil products that it can be kept free from irritation.

The wearing continuously of clothing saturated with oily material also acts prejudicially. In a similar way it can be easily understood that irritation is readily caused by the oily materials in contact with the hair follicles and gradually getting to the more sensitive layers of skin through the hair follicles and sweat ducts.

PROGNOSIS:-

Recent eruptions readily disappear on ceasing to work in the Paraffin Sheds. Eruptions of longer standing also disappear in time, but there is apt to be left some dryness, wartiness or induration of skin. At the same time, though only one serious condition/

condition was noted among the workmen, it is not to be assumed that the condition is unworthy of attention. The greatest care must be taken to adopt all the preventitive measures possible, and to examine the workmen at regular intervals.

PROPHYLACTIC MEASURES:-

(1). Facilities for cleanliness. This is very important. I understand that arrangements are in process of being completed for an installation of upright spray baths, but delay has been due to want of material, etc. The workmen are all prepared to use these, as they now understand the necessity for a complete washing of the body at regular intervals.

(2). Protective Applications. None of the workmen use anything of the sort, but among the workmen in the same departments of the Broxburn Oil Coy., whom I examined recently, the use of castor oil as a protective covering for the arms is common. Broxburn workmen know that castor oil, which is insoluble in paraffin oil, acts in a curative way by removing crusts, scales, etc., as well as forming an impervious layer over the skin. It might be of importance to ensure a supply of neutral soap at the baths to be erected, as a strongly alkaline soap has a tendency to remove the outer or more protective layers of skin.

PARAFFIN SHED WORKMEN.

AUGUST, 1919.

Report of Examination of Workmen in the Paraffin Department. Uphall
Oil Works. August 7th. 1919.

For description of the skin conditions seen, and grouping arrangements, reference may be made to Report of first examination, February, 1919.

Thirtytwo workers in Paraffin Sheds were examined by me on 7th August, of whom 28 were previously examined in February of this year. Throughout the examination reference was made to the diagrams supplied with first Report, and each man's present condition was compared with his condition in February, 1919, as recorded on Chart at that time.

The following Summaries show the results of the present examination.

Group 1 - Men who show no trace of any skin lesion.

Seventeen men (53.1%) were quite free and placed in this Group.

(NOTE:- In each Group, the figure in parenthesis after each man's name indicates the Group in which he was placed in February, 1919)

James McArdle	(1)	Green Sheds.
Patrick Boyle	(1)	" "
Alex. Tullis	(1)	" "
George Norris	(1)	" "
Maxwell Caine	(1)	" "
David Tweedie	(1)	" "
William Slater	(3)	" "
William Stanley	(3)	" "
James Stein	(3)	" "
John Stein	(1)	Sweating Sheds.
Alex. Aitken, Sr.	(1)	" "
Wm. Linton	(1)	" "
John Gardiner	(1)	" "
Archd. Brownlie	(1)	" "
Alex. Aitken, Jr.	(2)	" "
George Beattie	(1)	" "
Robert McConnell		" (Not examined previously).

Group/

Group 2 - Men who show only a few papules.

Four men (12.5%) were included in this Group.

James Goodall	(1)	Sweating Sheds.	
Arthur Mulholland	(3)	Lub. Paraffin.	
Robert Ros		Green Sheds.	} Not examined previously.
David Aitken		" "	

Group 3 - Showing a slight degree of eruption limited in extent.

Seven men (31.9%) were placed in this Group.

Robert Mitchell	(4)	Green Sheds.	
John Boyle	(4)	" "	
Charles McRadden	(3)	" "	
Thos. Norris	(3)	Sweating Sheds.	
Joseph Howie	(3)	Lub. Paraffin.	
Duncan Darroch	(3)	" "	
Thos. Garry		Sweating Sheds	(not examined previously).

Group 4 - Men showing extensive eruption.

Four men (12.5%) were placed in this Group.

Alex. Cannon	(4)	Sweating Sheds.	
John Gardiner, Sr	(5)	" "	
Denis Houston	(4)	Green	"
Magnus Shearer	(4)	" "	"

Since last examination, John Gardiner has had growth on arm, noted in February Report, removed. The wound has healed nicely, and there is no sign of recurrence.

Frequency August, 1919, compared with February, 1919:-

	<u>February, 1919.</u>	<u>August, 1919.</u>
Group 1,	46.0%	53.1%
" 3,	10.8%	13.5%
" 3,	31.6%	31.9%
" 4,	13.2%	12.5%
" 5,	3.7%	Nil.
	<u>100.0%</u>	<u>100.0%</u>

General Remarks:- Most men showed some improvement since February, with the exception of two only, who have deteriorated.

Eight/

Eight men are so distinctly improved that they have been transferred to higher groups, viz:-

- 1 from Group 2 to Group 1.
- 3 from Group 3 to Group 1.
- 1 from Group 3 to Group 2.
- 2 from Group 4 to Group 3.
- 1 from Group 5 to Group 4.

Six men in Groups 3 and 4 are retained in these Groups.

On the whole there has been some improvement in cleanliness of body and clothing, as the importance of this is now more readily recognised. The use of castor oil as a preventative is more common now than in Feb., 1919.

With this report are supplied diagrams showing the present condition of the workmen examined.

11th Aug., 1919.

Dr. Scott.

REPORT on EXAMINATION of WORKMEN in
PARAFFIN DEPTS., UPHALL WORKS.

MARCH, 1921.

Examination of Workmen in Paraffin Dept., Uphall Works.

In accordance with arrangements, I completed the 3rd examination of the workmen in Paraffin Dept., Uphall Works, on March 3rd., 1921, and submit the following report on the conditions of the workmen employed.

The various conditions due to nature of employment met with were:-

- (1). Simple Erythema.
- (2). Erythematous Dermatitis.
- (3). Papular Dermatitis.
- (4). Pustular Dermatitis.

These conditions have been fully described on a former occasion, and reference may be made to reports of Feb'y., 1919, and August, 1919, for detailed description of each condition.

In carrying out the examinations, the condition of each workman was compared with that illustrated on charts accompanying the first report to enable a comparative analysis of their former and present conditions to be made, as, however, several were examined in Feb'y. and August, 1919, who no longer are employed in Sheds, and as some examined recently have been once previously examined in Feb'y., 1919, and as several were not examined recently on account of illness, there is a possibility of some discrepancy in the results as shown in figures relating to various groups.

As before the conditions due to employment were divided into four groups: -

- 1). Those having no eruption due to employment.
- 2). Those having a few papules only.
- 3). Those showing a slight degree of eruption limited in extent.
- 4). Those showing extensive eruption.

In all, out of 22 men employed, 19 were examined, 7 of whom work in the Sweating Houses, and 12 are employed in and about Green Sheds, and the following summaries show the result of present examination. The figures in parenthesis after each man's name show the groups in which he was placed when examined in

Feb'y/

Feb., and August, 1919.

GROUP 1 - Those having no eruption due to employment:-

Twelve men, (63.1%) 6 of whom are employed in Sweating Sheds.

Name.	Grp. Feb. 1919.	Grp. Augt. 1919.	Age.	Department.	Length of service.
Jas. Stein,	(3).	1.	69	Sweating Sheds.	55 years.
John Stein,	1	1.	47	do.	33 "
Archd. Brownlie,	1	1	47	do.	25 "
John Campbell,	1	-	34	do.	19 "
Alex. Aithen,	1	1	56	do.	44 "
Ed. Linton,	1	1	20.	do.	3 "

Six are employed in Green Sheds -

George Horrie	1	1	38	Green Sheds.	19 years.
Alex. Tullis	1	1	63	do.	14 "
Maxwell Caine,	1	1	52	do.	16 "
Ed. Slater	3	1	36	do.	5 "
Ed. Stanley,	3	1	31	do.	4 "
Ed. Aithen,	-	2	31	do.	2 "

Of these one man has been transferred from Group 2.

Percentage of Group 1, Feb., 1919, 46% August, 1919, 53.1% March, 1921, 63.1%

This improvement in figures is more a relative than an absolute improvement, due partly to one man having been transferred from Group 2, and partly to a larger proportion of men formerly affected to some extent not having been examined at the present time, giving a relatively higher figure for Group 1. All presently included in Group 1, with one exception, were in the same Group in August, 1919, and as already stated, one man has been transferred from another group during present examination.

GROUP 2 - Those having a few papules only:-

One man (5.3%) has been placed in Group 2.

Thos. Garry,	-	3	26	Sweating Sheds.	2 years.
--------------	---	---	----	-----------------	----------

Percentage of Group 2, Feb., 1919, 10.8%; Aug., 1919, 12.5%, Mar., 1921, 5.3%

This figure is low, on account of one man, Group 2 at last examination, being unable to be examined on account of illness, another having been transferred to Group/

Group 1, and another having been transferred to Group 3.

The lengths of service, in Groups 1 and 2, vary from 55 to 2 years, and the ages from 69 to 20 years.

GROUP 3 - Those showing a slight degree of eruption limited in extent:-

Three men (15.8%).

Name.	Grp. Feb. 1919.	Grp. Augt., 1919.	Age.	Dept.	Length of Service.
John Boyle,	4	not exd.	45	Green Sheds	21 years.
Arthur Mulholland	3	2	48	do.	20 "
Thos. Anderson - not prev. examined			40	do.	14 "

Of these, John Boyle has improved considerably to allow of his transference from Group 4. Arthur Mulholland, after showing improvement at 2nd examination, has deteriorated somewhat, and has been replaced in Group 3. Thos. Anderson has not been examined previously.

Percentage of Group 3, Feb., 1919, 21.6%; Augt., 1919, 21.9%; March, 1921, 15.8%

One man in Group 3, Augt., 1919, was unable to be examined on account of illness; the allowing for this/percentage would be much the same as former examination.

Lengths of service vary from 21 years to 14 years; ages from 48 to 40 years.

Group 4 - Having diffuse eruption:-

Three men (15.8%) of those examined, are included in this group.

Magma Shearer	4	4	52	Green Sheds.	30 years.
Denis Houston,	4	4	67	do.	21 "
James Boyle,	4	-x	50	do.	21 "

*James Boyle, though not examined in time to be included in the second report was seen by me a few days later, and his condition was similar to his former state.

There is a marked improvement in the condition of Denis Houston, the arm most seriously affected being now in a healing condition.

Percentage of Group 4 Feb., 1919, 18.9%; Augt., 1919, 12.5%; Mar., 1921, 15.8%

The/

The Lengths of service vary from 30 to 21 years, and ages from 67 to 50 years.

GROUP 5 - Showing evidence of malignancy:-

6 men are included in this group.

Alterations from previous Examination (August, 1919):-

One man has been transferred from Group 2 to Group 1.

One from Group 2 to Group 3.

One from Group 4 to Group 3, i.e., 2 have improved and one has deteriorated since last examination.

FREQUENCY:-

	<u>Febv. 1919.</u>	<u>Aug. 1919.</u>	<u>March, 1921.</u>
Group 1,	45.0%	53.1%	63.1%
Group 2,	10.8%	12.5%	5.3%
Group 3,	21.5%	21.9%	15.8%
Group 4,	18.9%	12.5%	15.8%
Group 5,	2.7%		
	<u>100.0%</u>	<u>100.0%</u>	<u>100.0%</u>

Sites of Eruption:- Of the 7 men affected, 3 (43%) show eruption on hands and arms only. Four (57%) show eruption on arms and legs.

Cleanliness:- Full advantage appears to be taken of the bathing facilities, resulting in a general improvement in the condition of the workmen affected with conditions due to contact with paraffin.

General Remarks:- One man only employed in Sweating Sheds is slightly affected, the others being free. With a few exceptions, all the workmen examined have many years of service in the Paraffin Sheds, and of these affected and graded in Groups 3 and 4, the shortest period of service is 14 years, which would explain the more chronic nature of the skin conditions, the result of more harmful conditions and less carefulness in former years. As a consequence of this more chronic type, improvement towards total disappearance, or even any substantial improvement can only be expected to take place very slowly.

he/

The workmen are reasonably interested in the routine examination, as shown by their readiness to assist in every way, both by their preparedness and by their pointing out any conditions requiring to be noted in the course of examination.

24th March, 1921.

Alexander Scott
M.B.L.

Broschman

REPORT of EXAMINATION of YOUNG'S OIL COY'S

ADDIEMELL PARAFFIN SHED WORKMEN.

Dr. Scott.

REPORT of EXAMINATION of YOUNG'S OIL COY'S

ADDIEWELL PARAFFIN SHED WORKERS.

APRIL, 1919.

Report of Examination of the Addiewell Paraffin Shed Workers of
Young's Paraffin Light & Mineral Oil Coy. April. 1919.

In accordance with Agreement, dated 21st May, 1918, between H. J. Wilson, Esq., H. M. Superintending Inspector of Factories, and the various Companies in the Shale Oil Industry, to the effect that all workers in the Paraffin Sheds have to be examined at least once every quarter by the Factory Surgeon, I carried out the first examination of the Addiewell workmen between 17th and 21st April, 1919, and have to submit the following Report of the result of this examination.

General Conditions found on Examination:- The object of examining Paraffin Workers periodically being to ascertain the skin conditions met with, in the varying degrees of severity, among the workers, and, if necessary, to take steps for their protection, the whole surface of the body was examined by me in every instance, while special attention was paid to the parts known to be most frequently affected, viz., arms and forearms, legs, feet and scrotum. During this examination, the following skin conditions were noted.

1. Erythema:- This consists in an inflammatory condition of skin, varying in degree from a simple reddening or mottling (hyperaemia) occurring in more or less diffuse patches, to

2. Erythematous Dermatitis, in which the discoloration is more marked. In this condition there is a tendency to permanent pigmentation of skin, and ultimately to some slight induration of superficial layers of skin, as evidenced by whitish patches, the result of a healed dermatitis. In some of the more chronic cases, there/

there is also a tendency formation of small flat patches of thickening of the horny layers of the skin, giving the appearance of wartiness (*verruca plana*). This usually occurs in patches about the size of rather less than the area of a threepenny piece, and these are, as a rule, covered by small blackish scales..

3. Papular dermatitis. (*Erythema papulatum*):- This

consists entirely of small reddish or purplish red elevations, pea shaped, flattened on the top, or with a small central depression. The numbers of papules vary from a very few to great numbers distributed all over the affected parts. In some cases these papules occur without erythema, in others they appear with the erythematous dermatitis, while in old standing cases the two conditions are usually associated and co-existent, and in these an eczematous condition is sometimes present, in which the skin is thickened, infiltrated, somewhat elevated or almost horny (*eczema sclerosum*), with desquamation of superficial layers of skin in fine scales. In a few cases on the tops of the papules are seen small horny excrescences, having the appearance of cutaneous horns. Frequently associated with this papular eruption is

4. Pustular dermatitis, due to the breaking down of papules, or to the inflammatory process being sufficiently acute to cause destruction of small points of superficial layers of skin. These have the appearance of small boils, with pustular tops.

5. Epithelioma. A malignant epitheliomatous growth was seen, due to the breaking down of a wart or papule, with subsequent rapid growth, and having all the appearance of an epitheliomatous growth.

In/

In addition, a granulating wound was seen, due to the recent removal of an epithelioma from back of hand, in Royal Infirmary, Edinburgh, while in another instance, there was noted a condition in which several warts, larger than usual, were present, with the suspicion that ultimately these would become malignant unless carefully attended to.

Sites of Eruptions:- Of 39 men examined, 14 were free (35.9%) and 25 showed some eruption (64.1%) Of the men affected, 11 (44%) had the eruption on hands, forearms, or arms only; 13 (49%) had an eruption on both hands and legs or feet; while in one instance only (4%) was the eruption confined to a foot, and in one instance (4%) the eruption was confined to the shoulder region.

Details of Examination:- For descriptive purposes, we have divided the workmen examined into groups according to freedom from, or extent of eruption, viz:-

Group 1. Men who show no trace of any skin lesion.

Group 2. Men who have one, two, or three papules, not more.

Group 3. Men who show any eruption to a slight degree, limited in extent and not diffused.

Group 4. Men who have extensive eruptions over hands, legs or both.

Group 5. Any showing presence of warty growths of a malignant type, or becoming so.

included

On several men in Group 3, there were warts of ordinary character, such as may be seen on any hand; others had one or two isolated papules clearly due to contact with paraffin products. Reference may be made to the detailed description of each man examined, and/

and chart showing extent of his eruption, supplied with this Report.

In every case the name, age, occupation and length of service are given, as reference will be made later to these details in their relation to the prevalence of the skin conditions met with.

The Crude Paraffin Wax Department is described as "Green Sheds", while the Refined Department is described as "Sweating Sheds".

Workmen employed in Paraffin Sheds.

Thirty-nine workmen were examined by me, 26 of whom work in the Green Sheds, and 13 in the Sweating Sheds. Fourteen of these have been placed in Group 1, there being no eruption of any kind. The ages of the workmen in this Group vary from 26 to 57 years, while their lengths of service vary from 1 to 29 years. The names are arranged according to length of service.

Group 1. Men who show no trace of any skin lesion.

<u>Name.</u>	<u>Age.</u>	<u>Occupation.</u>	<u>Length of Service.</u>
Henry Aitken	41	Green Sheds	29 years.
Thos. McQueen	57	Sweating Sheds	28 "
Thos. Porter	46	" "	28 "
Jas. Jenkinson	39	" "	25 "
Geo. Fair	38	" "	24 "
Thos. Fair,	31	Green Sheds	14 "
Johnson McQueen	36	Sweating Sheds	9 "
Geo. McGuigan	39	Green Sheds	8 "
John Sheridan	46	" "	7 "
Jas. Sheridan	43	" "	5 "
John Mayberry	31	Sweating Sheds	3 "
Wm. Cove	38	Green Sheds	3 "
Mich. McNally,	39	" "	1 "
John McWhinnie	31	Sweating Sheds	1 "

These/

These form 3 5.9% of the employees in the Paraffin Sheds.

Group 2. A few simple warts or papules, not more than two or three.

<u>Name.</u>	<u>Age.</u>	<u>Occupation.</u>	<u>Length of Service.</u>
Jas. Jenkinson,	78	Green Sheds	40 years.
Allan Stevenson,	34	" "	15 "
Mich. Fallon,	38	" "	14 "
Wm. Cox,	47	" "	7 "
Pat. Langdon,	7	" "	7 "

(Army 4 years).

The ages of workmen in this Group vary from 34 to 78 years, and their lengths of service from 7 to 40 years. These form 13.8% of the men employed in Paraffin Sheds.

Group 3. showing a slight degree of erythematous or papular dermatitis, localised to confined limits and not diffuse.

<u>Name.</u>	<u>Age.</u>	<u>Occupation.</u>	<u>Length of Service.</u>
Jas. Kerr,	52	Green Sheds	29 years.
John Langan,	48	" "	23 "
Jas. Aitken,	39	" "	27 "
Geo. McLernon,	45	Sweating Sheds.	28 "
Robt. Torrance,	43	" "	23 "
Peter McGurk,	43	Green Sheds.	20 "
Matthew Taylor,	32	Sweating Sheds	18 "
Henry Walters	36	" "	14 "
Thos. Murphy,	29	Green Sheds	4 "
Chas. Farley	22	" "	4 "
Wm. Caldwell	41	" "	1 "

Eleven men are included in this Group, forming 28.2% of the workers in Paraffin Sheds. The ages vary from 29 to 52 years, while their lengths of service vary from 1 to 29 years.

Group 4. showing a marked degree of erythematous or papular dermatitis.

<u>Name.</u>	<u>Age.</u>	<u>Occupation.</u>	<u>Length of Service.</u>
Wm. Cummings	63	Green Sheds	33 years.
Owen McNally,	62	" "	36 "
Moses Jones	59	Sweating Sheds	33 "
Thos Byrne	37	Green Sheds	29 "

(over)

Group 4. (Continued).

<u>Name.</u>	<u>Age.</u>	<u>Occupation.</u>	<u>Length of Service.</u>
Martin Gallocher	35	Green Sheds	23 years.
Edward O'Hara	43	Sweating Sheds	21 "
Thos. Bradley	45	Green Sheds	15 "

This Group forms 17.9% of workmen employed in Paraffin Sheds.

The ages vary from 35 to 63 years, while in every instance the length of service is a long one, varying from 15 to 38 years.

Group 5. Any showing presence of warty growths of malignant nature, or becoming so.

One man, Robert McLernon had a large ulcerating sore on right forearm, quite certainly malignant, while another, David Anderson had a granulating wound on back of left hand, the result of removal of epitheliomatous growth.

<u>Name.</u>	<u>Age.</u>	<u>Occupation.</u>	<u>Length of Service.</u>
Robt. McLernon	62	Green Sheds	40 years.
David Anderson	64	" "	33 "

These form 5.1% of total number employed.

Remarks:-

Frequency:- 35.9% of workmen are altogether free from any sign of paraffin eruption.
 12.9% show only one or two papules.
 28.3% are affected to a moderate extent.
 17.9% are extensively affected.
 5.1% are affected with, or have recently had a malignant condition.

100%

A number of those who had been employed continuously for long periods showed clearly evidence of former extensive dermatitis which had healed, leaving whitish scars, as if healing had taken place under improved conditions.

One or two cases were noted in whom there had formerly been/

been an eruption which disappeared after a term of service with H. M. Forces, and these showed signs of a recent eruption on resuming work in Paraffin Sheds.

Cleanliness:- Generally there was room for greater cleanliness, due to facilities for bathing, etc., at Works being poor, while the home arrangements in that respect could also be improved on.

No appearance of specific contagious disease was seen.

Exciting Cause:- There can be no doubt but that in every case contact with paraffin oil products, in refined or semi-refined state is the actual exciting cause. The arms, being most exposed, suffer most, while the legs are affected by drops of oil, etc., from the hydraulic presses or other machinery used in the process of treating the oil products getting into boots or on to clothing.

Predisposing Causes:- Age cannot be said to have much, if any, influence in the causation of eruptions, as many elderly men are quite free, while conversely, the eruptions are as frequent on young men as on those in middle life.

Age, on the other hand, seems to have a distinct influence on the severity of the conditions met with, as, with the exception of one man in Groups 4 and 5, all those affected are over 43 years of age.

In Group 1,	5 men are over 40 years of age, 9 are under 40 years.
" " 2,	3 men are over 40 years of age, 3 are under 40 years.
" " 3,	6 men are over 40 years of age, 5 are under 40 years.
" " 4,	6 men are over 40, and 1 is under 40 years.
" " 5,	2 " " " 40, and none are under 40.

Length of Service:-

This has not much influence on the causation of paraffin eruptions, as many of the workmen who have been continuously employed in these Departments are quite free, while some of those affected have been employed for shorter periods. Length of service, however, must have some direct influence on the severity of the eruptions found, as in Groups 3, 4, and 5, with three exceptions, all have been employed for over 5 years.

In Group 1, 8 men have over 8 years service, 6 have under 8 years service.
 " " 3, 3 " " " " " " 2 have under 8 years service.
 " " 3, 8 " " " 14 " " 3 have under 14 years service.
 " " 4, 7 " " " 15 " " None under 15 years.
 " " 5, both have had over 35 years service.

Occupation:-

Of 26 Green Shed workmen examined, 7 (26.9%) were quite free from eruption, and were accordingly placed in Group 1. Nineteen (73.1%) being more or less affected, were ⁱⁿ placed in Groups 2, 3, 4, and 5.

Of the 13 Sweating Shed workmen examined, 7 were quite free (53.9%), and were placed in Group 1. Six (46.1%) were placed in Groups 3 and 4.

It would seem, therefore, that there is a greater tendency for those working in the Grude Department to be subject to this condition.

Personal Idiosyncrasy:-

Conditions such as a tendency to skin disease or hypersensitiveness of the skin must have some influence as a predisposing cause.

Cleanliness:-

This must have a very important effect in preventing the development of eruptions, Workmen should

be impressed with the fact that by exercising great care in keeping the skin well washed the irritation due to the paraffin products can be prevented to a considerable extent.

The wearing of clothes saturated with oily material also acts prejudicially. In a similar way it can be readily understood that irritation is readily caused by oily materials lying in contact with the hair follicles, gradually getting to the deeper layers of skin through these and also through the sweat ducts.

Prognosis:- Recent eruptions readily disappear after ceasing to work in the paraffin sheds. This has been apparent among men who, after being affected to some extent, had a period of service in the Army, after which it disappeared, and on subsequent employment again in the paraffin sheds there was a new development of paraffin eruption. Eruptions of long standing also tend to disappear in time, but there is apt to be left some dryness or wartiness of skin with some induration. In several of the older workmen, as already pointed out, were seen whitish, indurated patches, the result of a former dermatitis, which had healed.

It is not to be assumed that the various eruptions due to paraffin are unworthy of attention. The greatest care must be taken to adopt all the preventive measures possible and to examine the workmen at regular intervals.

Prophylactic Measures:- (1) Facilitates for cleanliness. This is very important. We understand that arrangements are being made for an installation of baths, etc. at the Works. When completed, it is to be hoped that full advantage will be taken of any such facilities.

(3) Protective Applications:- The use of protective applications seems to be more common among the workmen of other Oil Companies than the Addiswell workmen. These applications are Castor Oil, rubbed well over the exposed parts, this being insoluble in paraffin preparations, and so protecting the skin, or a preparation of glycerine and carbolic acid, used in the same way.

29th Apl. 1912.

GROUP 1:-

Those having no Occupational Eruptions.

Medical Examination of Workers in Paraffin Department.

Name.

Age.

Occupation.

Length of Service.

D. D. (P).

31½ years.

Paraffin Sheds.

2½ years.

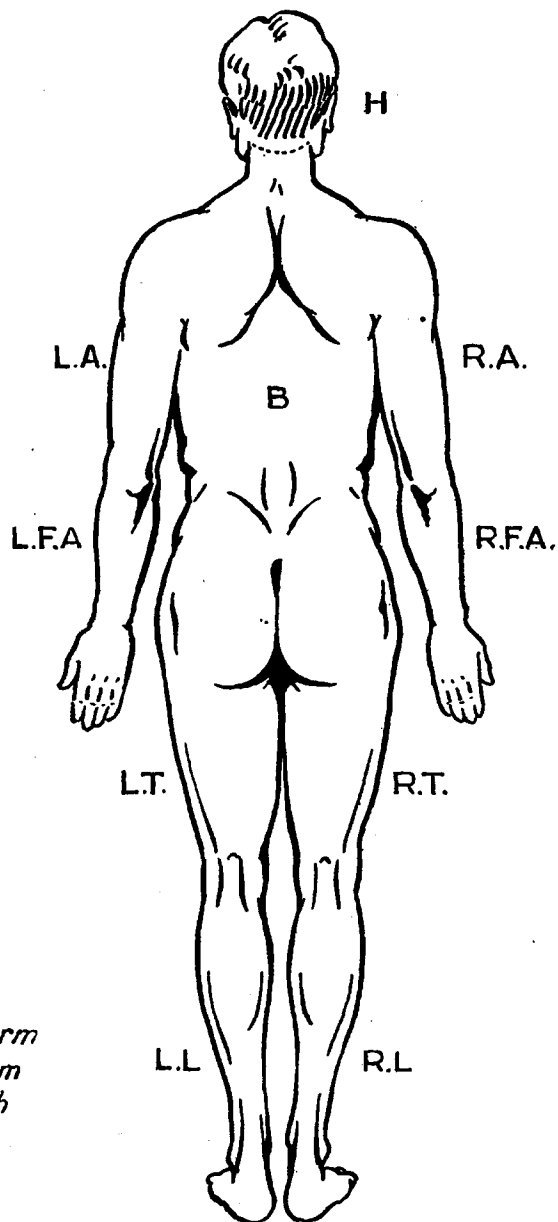
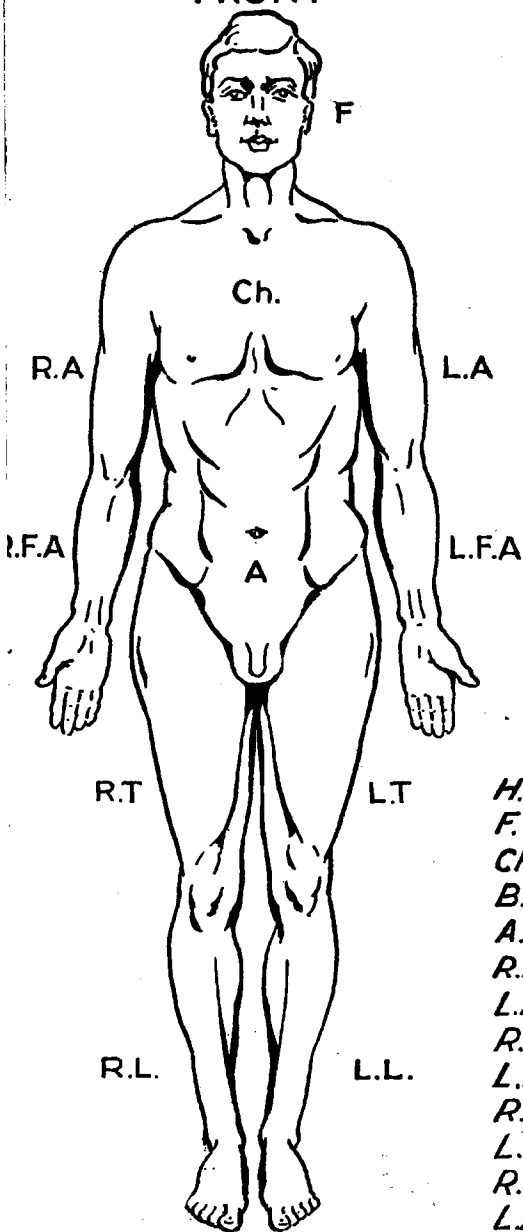
Description of Condition

FRONT

GROUP

BACK

1.



- H. Head
- F. Face
- Ch. Chest
- B. Back
- A. Abdomen.
- R.A. Right Arm
- L.A. Left Arm
- R.F.A. Right Forearm
- L.F.A. Left Forearm
- R.T. Right Thigh
- L.T. Left Thigh
- R.L. Right Leg
- L.L. Left Leg

GROUP 2:-

Those having Slight Erythema. or folliculitis,
or not more than five papules.

<u>Name.</u>	<u>Age.</u>	<u>Occupation.</u>	<u>Length of Service.</u>
T. McC. (O) .	25 yrs	Paraffin sheds.	2 yrs.

Description of Condition.

R.A. - one papule behind elbow.

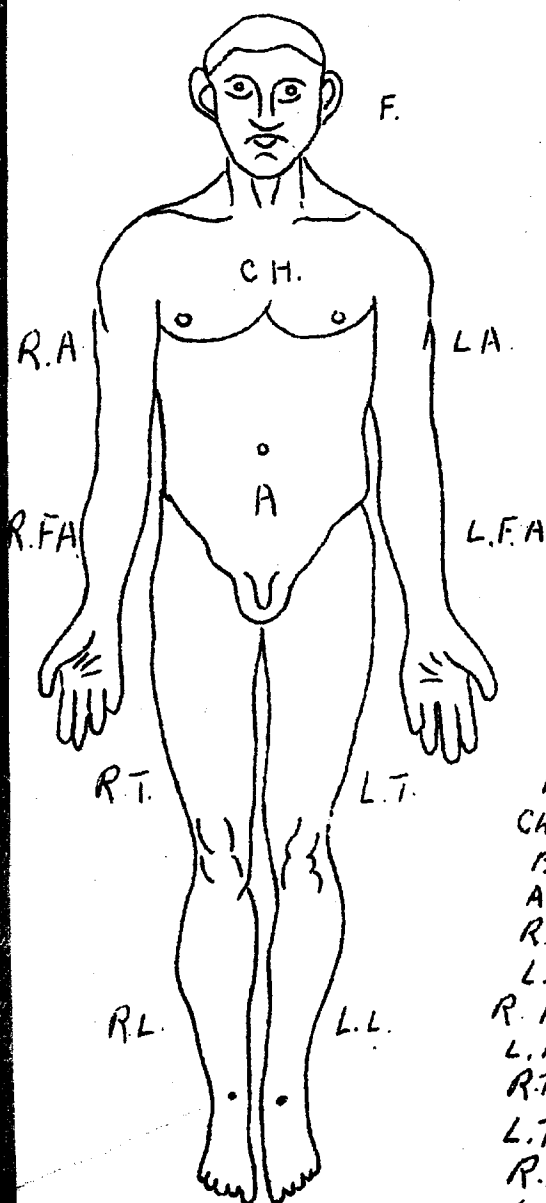
L.A. 2 papules behind elbow.

R.L. one papule in front of each ankle.

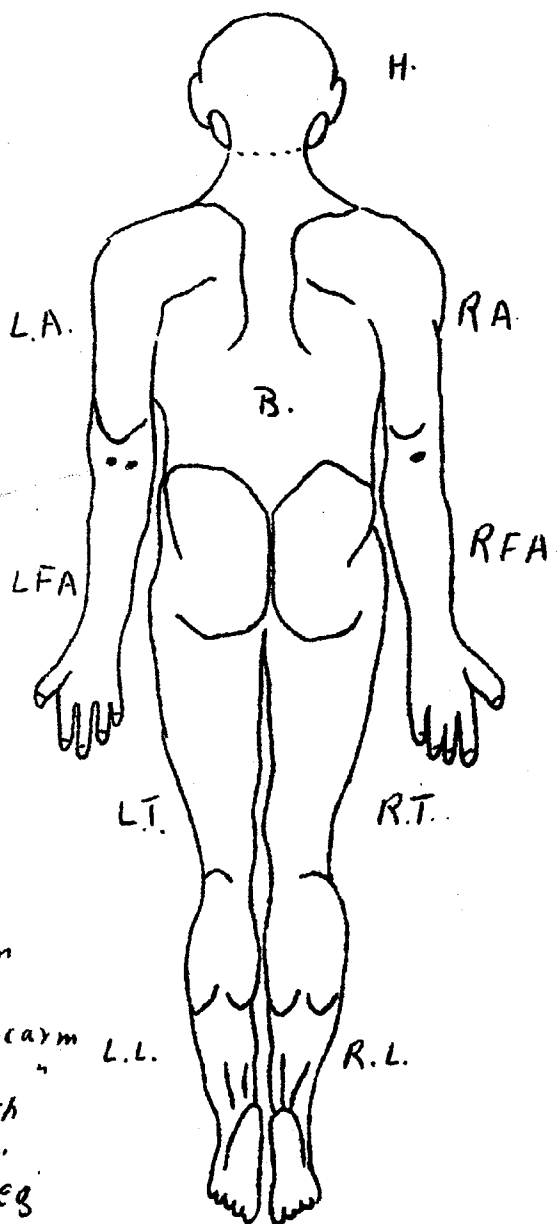
L.L.

Group. 2

Front.



Back.



H. Head
 F. Face.
 Ch. Chest.
 B. Back.
 A. Abdomen
 R.A. Right Arm
 L.A. Left "
 R.FA. Right Forearm
 L.FA. Left " "
 R.T. Right Thigh
 L.T. Left " "
 R.L. Right Leg
 L.L. Left leg.

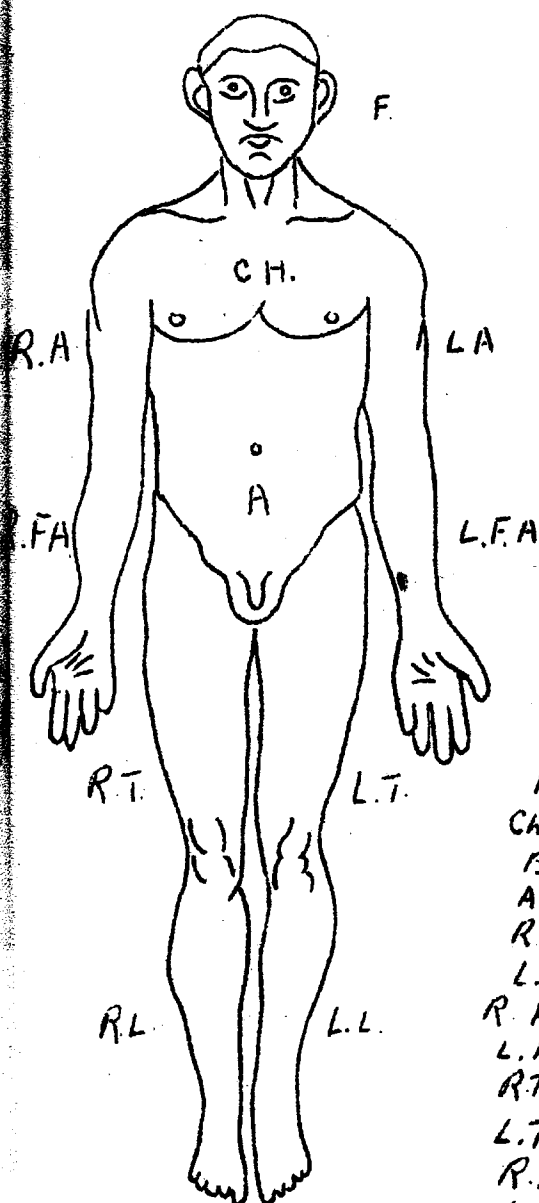
Name. Age. Occupation. Length of Service
 (B). 32 yrs. Paraffin sheds. 10 years.

Description of Condition.

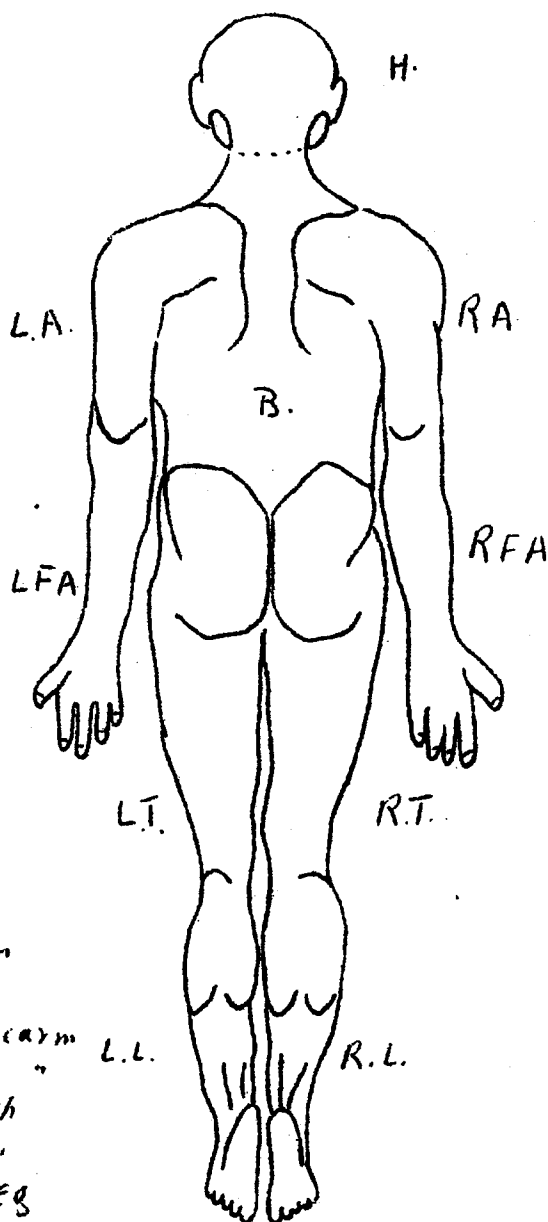
Wart on inner side L.F.A.

Group. II.

Front.



Back.



H. Head
 F. Face.
 CH. Chest
 B. Back
 A. Abdomen
 R.A. Right Arm
 L.A. Left "
 R.F.A. Right Forearm
 L.F.A. Left " "
 R.T. Right Thigh
 L.T. Left " "
 R.L. Right Leg
 L.L. Left leg.

<u>Name.</u>	<u>Age.</u>	<u>Occupation.</u>	<u>Length of Service</u>
H. (B).	55 years.	Paraffin sheds.	28 years.

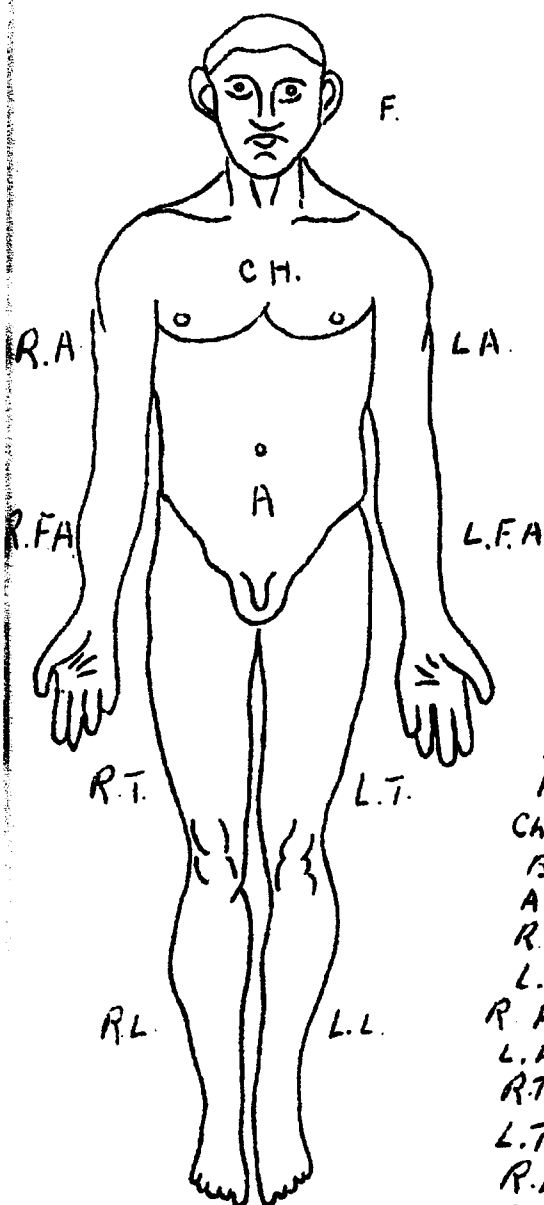
Description of Condition.

1 very small wart back of right hand.

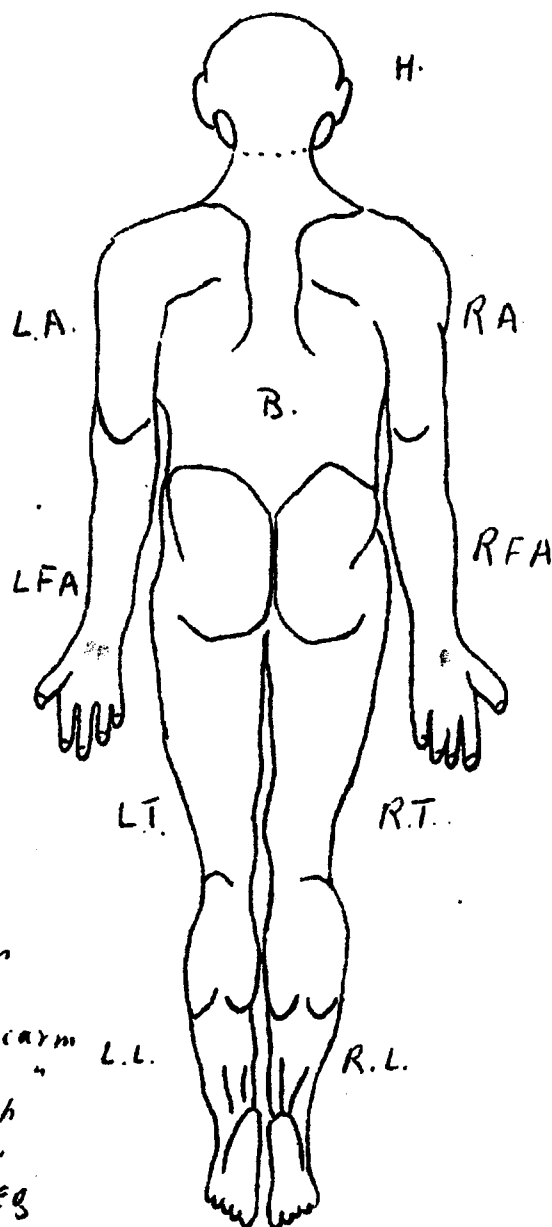
2 small scaly warts back of left hand.

Group. 11.

Front.



Back.



H. Head
 F. Face.
 CH. Chest
 B. Back
 A. Abdomen
 R.A. Right Arm
 L.A. Left "
 R.FA. Right Forearm
 L.FA. Left " "
 R.T. Right Thigh
 L.T. Left " "
 R.L. Right Leg
 L.L. Left leg.

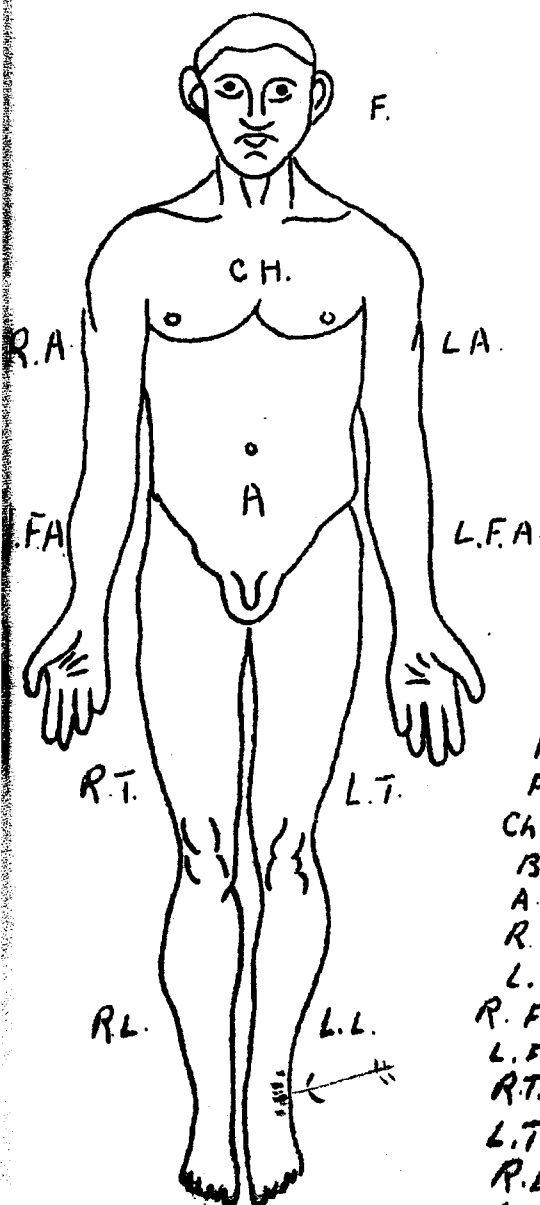
Name. Age. Occupation. Length of Service.
 ry C. (B). 28 yrs. Paraffin Sheds. 4 months.

Description of Condition.

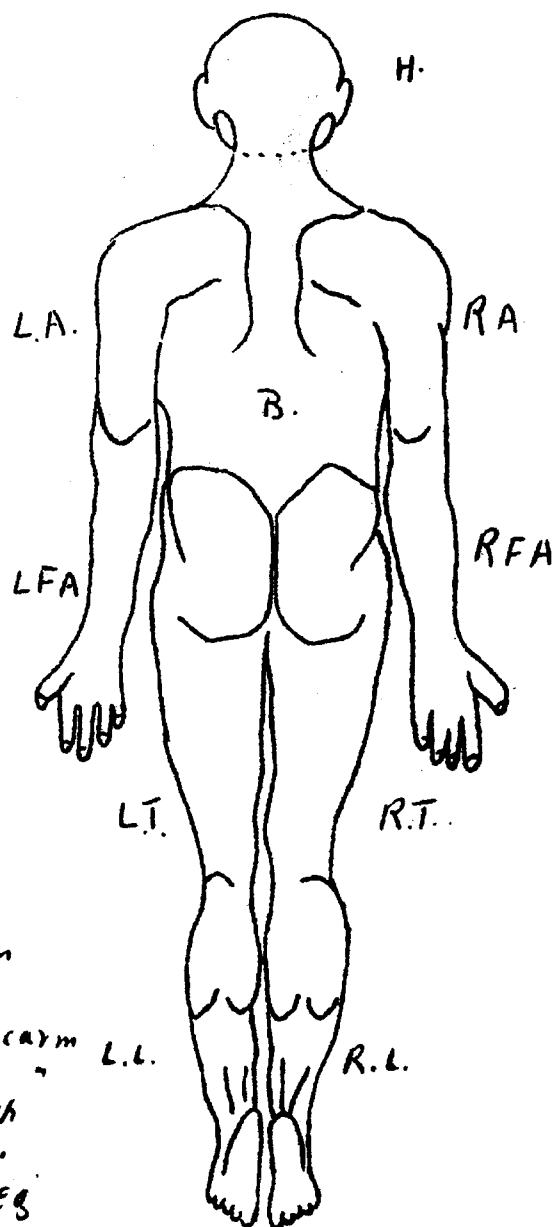
A few small papules outer side left ankle.

Group.
II.

Front.



Back.



H. Head
 F. Face.
 Ch. Chest.
 B. Back.
 A. Abdomen
 R.A. Right Arm
 L.A. Left "
 R.FA. Right Forearm
 L.FA. Left " "
 R.T. Right Thigh
 L.T. Left " "
 R.L. Right Leg
 L.L. Left leg.

<u>Name.</u>	<u>Age.</u>	<u>Occupation.</u>	<u>Length of Service</u>
McG. (B).	59 years.	Paraffin sheds	30 years.

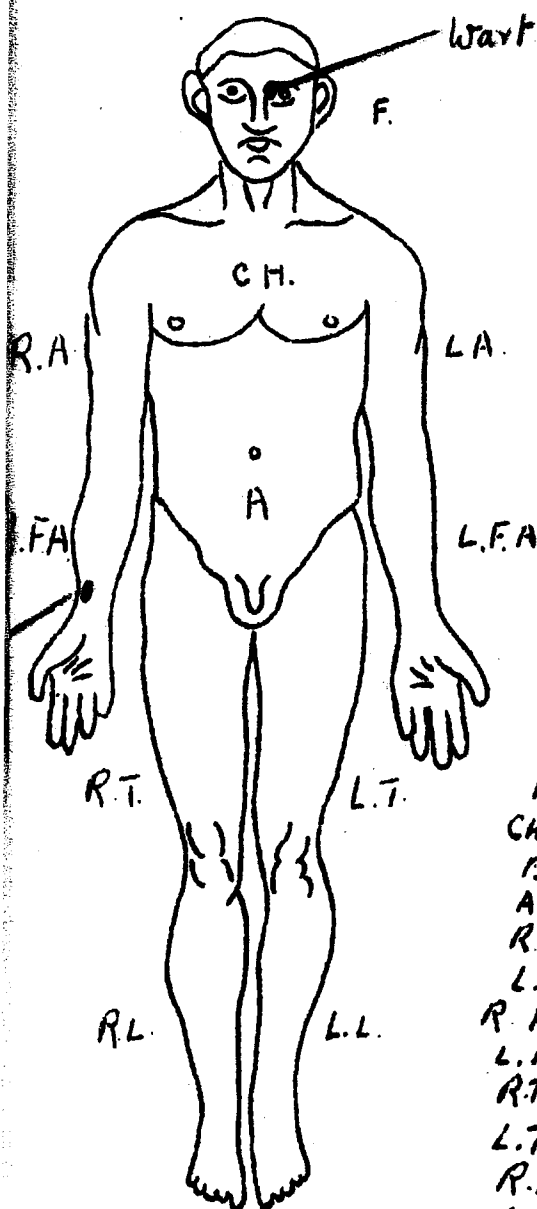
Description of
Condition.

Small papular wart on inner end of left upper eyelid.

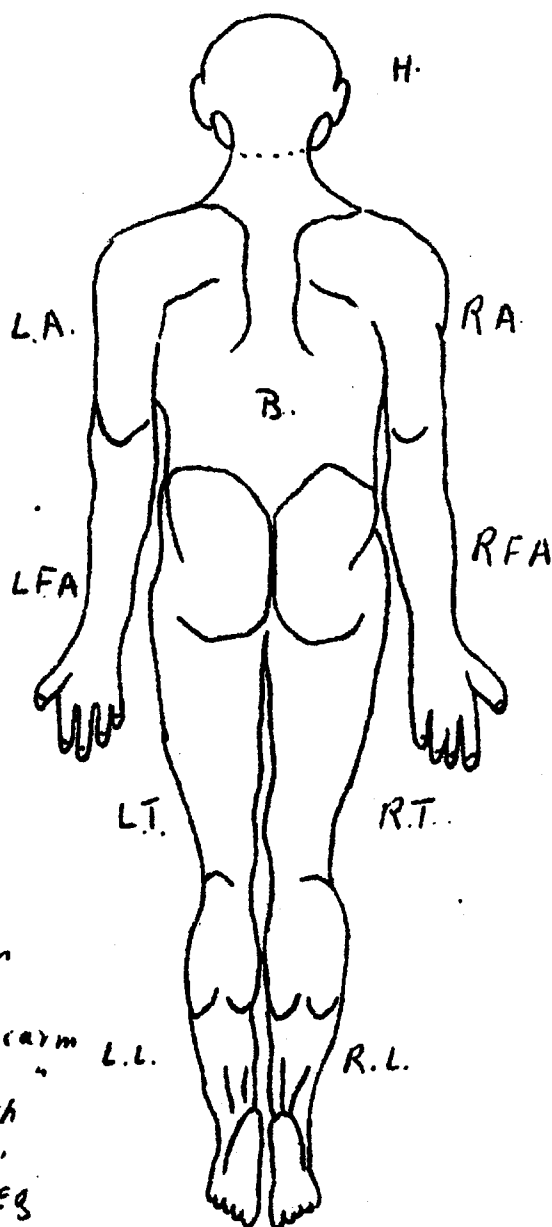
Small nodule R.F.A. above wrist.

Group. II.

Front.



Back.



H. Head
F. Face
Ch. Chest
B. Back
A. Abdomen
R.A. Right Arm
L.A. Left "
R.F.A. Right Forearm
L.F.A. Left "
R.T. Right Thigh
L.T. Left "
R.L. Right Leg
L.L. Left leg

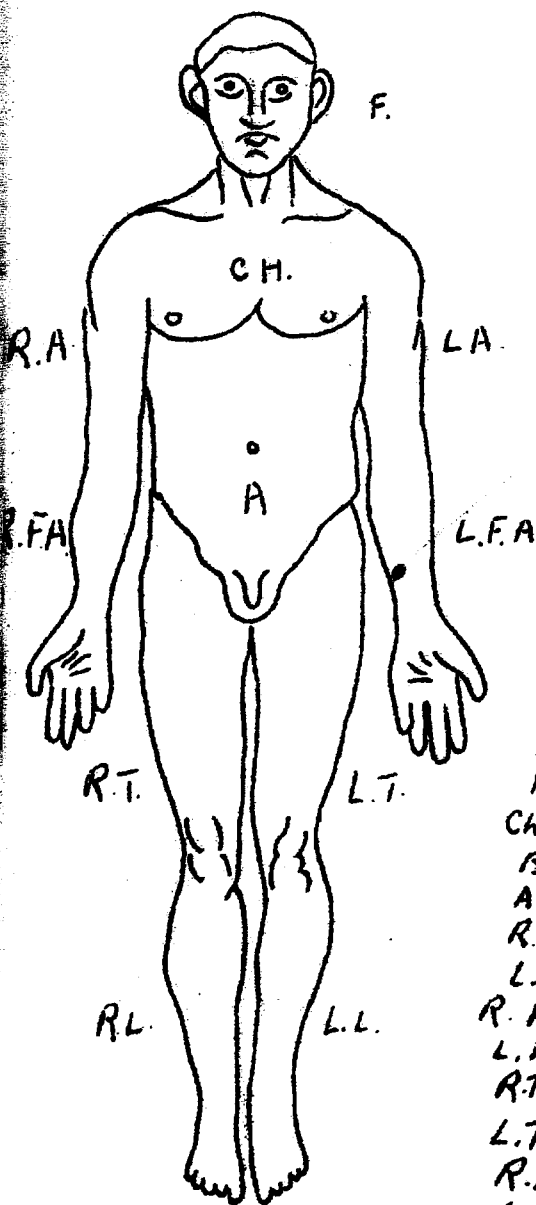
Name. Age. Occupation. Length of Service.
 (P.) 39 years Paraffin Sheds. 5 years.

Description of
Condition.

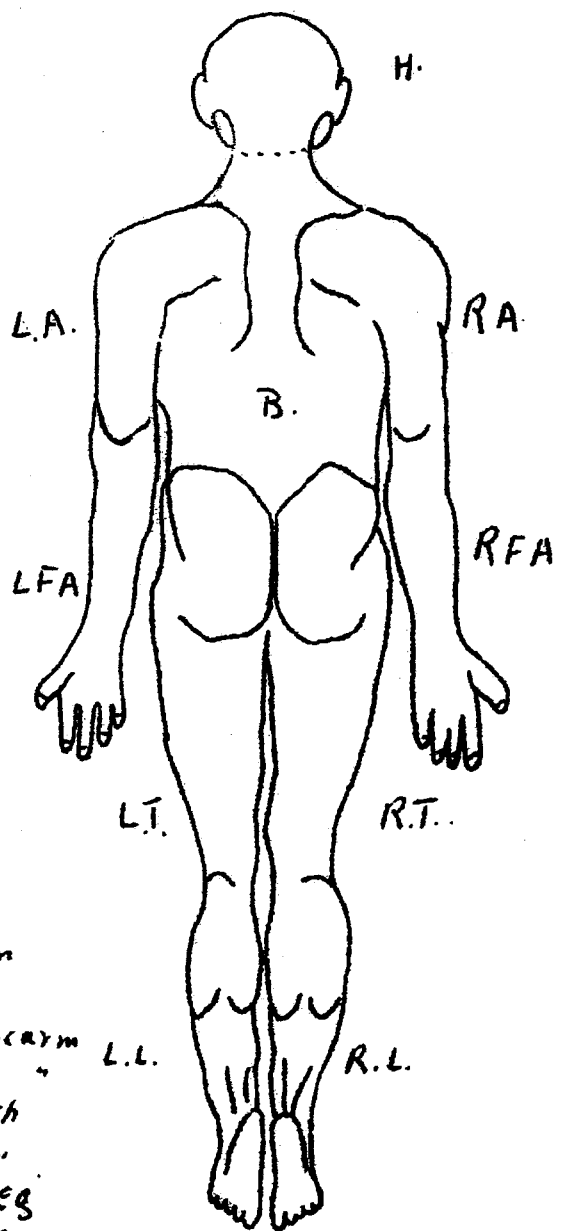
L.F.A. One papule middle of ulnar border.

Group. 2.

Front.



Back.



H. Head
 F. Face.
 Ch. Chest.
 B. Back.
 A. Abdomen
 R.A. Right Arm
 L.A. Left "
 R.F.A. Right Forearm
 L.F.A. Left "
 R.T. Right Thigh
 L.T. Left "
 R.L. Right Leg
 L.L. Left leg.

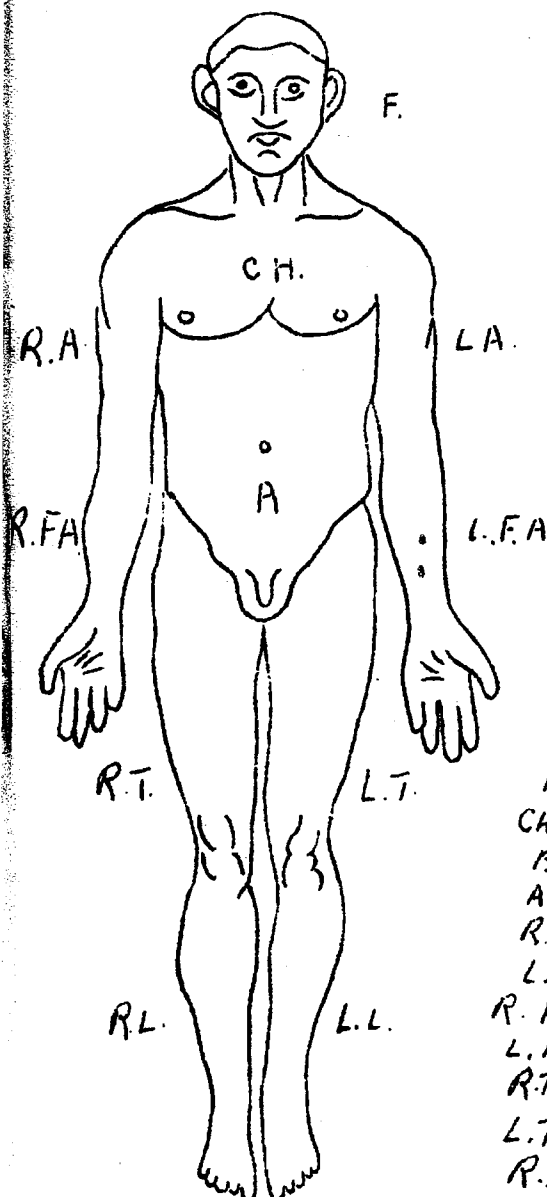
Name. Age. Occupation. Length of Service.

(P.) 52 years. Paraffin Sheds. 20 years.

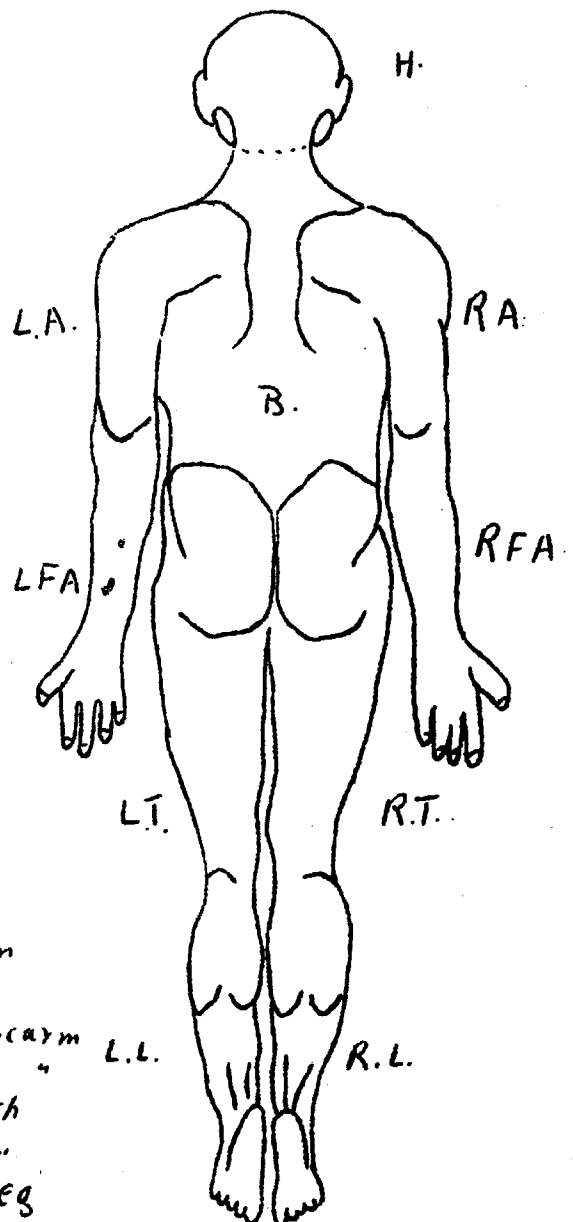
Description of Condition. L.F.A. Four tiny papules, two anteriorly, two posteriorly.

Group. 2.

Front.



Back.



H. Head
F. Face.
Ch. Chest.
B. Back.
A. Abdomen
R.A. Right Arm
L.A. Left "
R.FA. Right Forearm
L.FA. Left "
R.T. Right Thigh
L.T. Left "
R.L. Right Leg
L.L. Left leg.

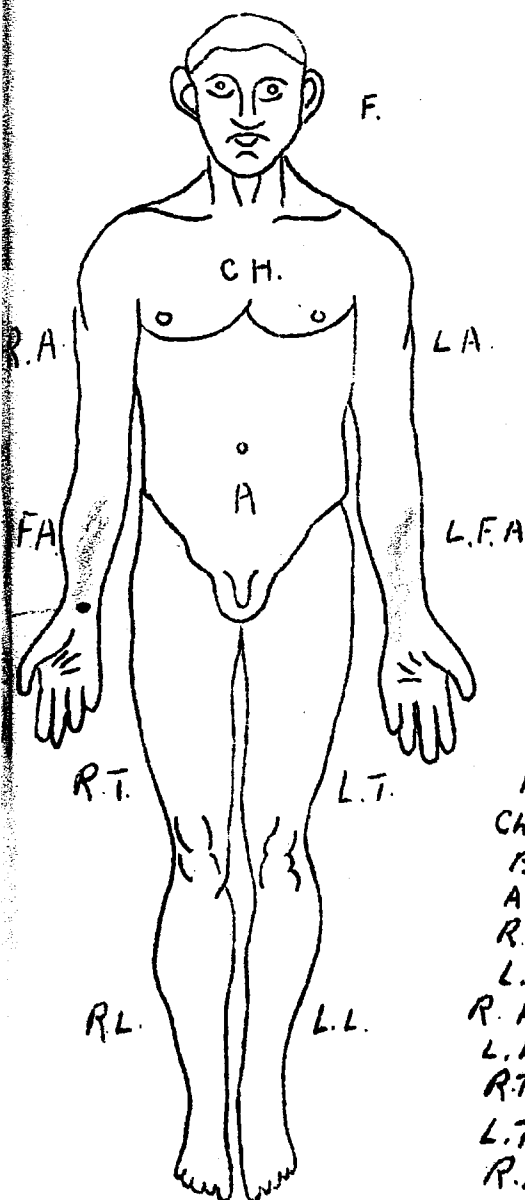
Name. Age. Occupation. Length of Service.

C. (P.) 45 years. Paraffin Sheds. 15 years.

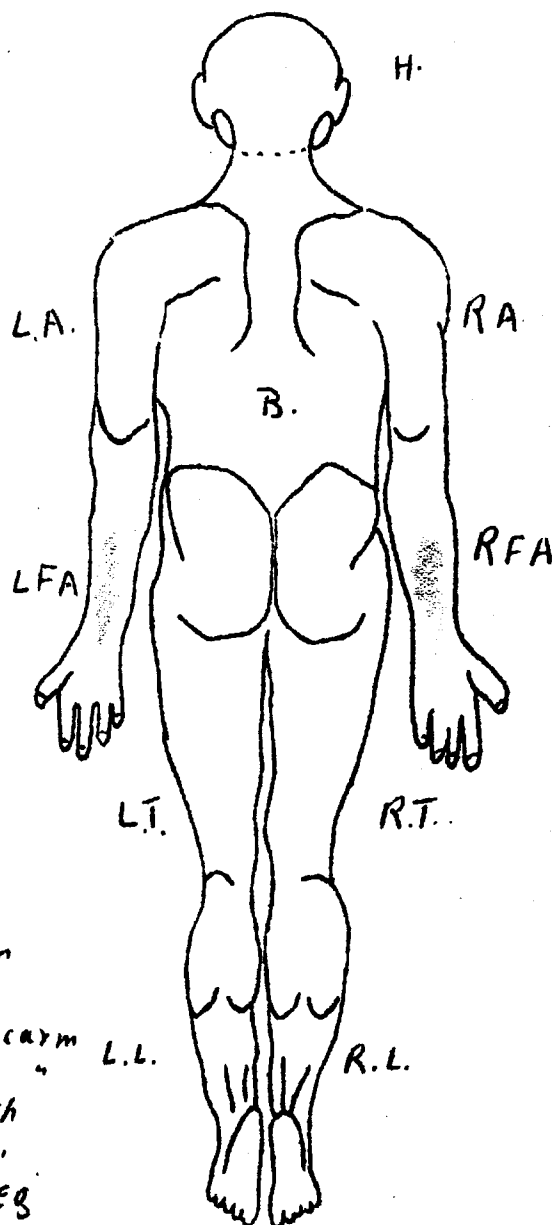
Description of Condition. Slight erythema both arms. One papule anterior surface right wrist.

Group. 2.

Front.



Back.



H. Head
F. Face.
CH. Chest.
B. Back.
A. Abdomen
R.A. Right Arm
L.A. Left "
R.F.A. Right Forearm
L.F.A. Left " "
R.T. Right Thigh
L.T. Left " "
R.L. Right Leg
L.L. Left leg.

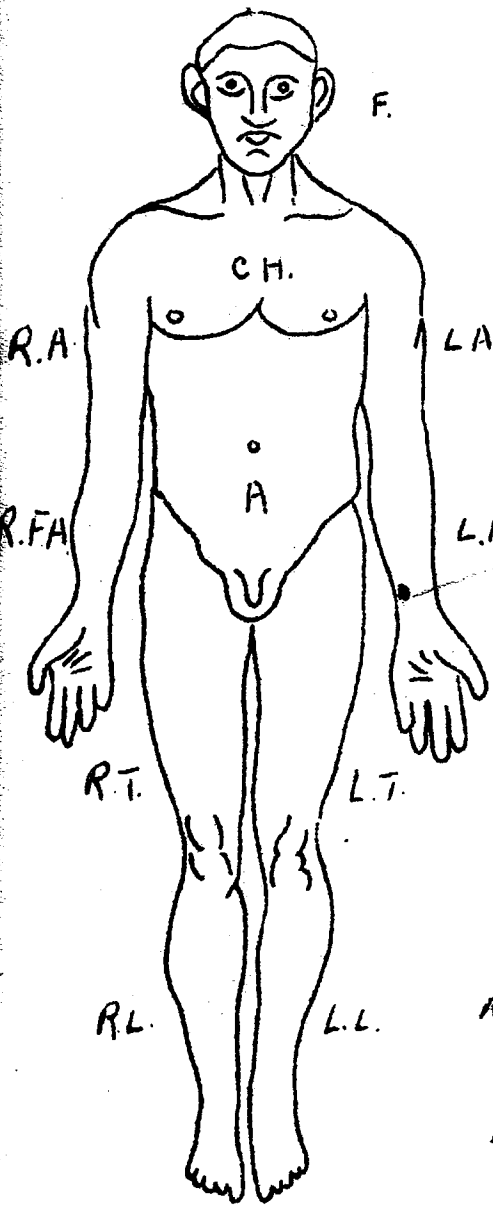
<u>Name.</u>	<u>Age.</u>	<u>Occupation.</u>	<u>Length of Service.</u>
(P.)	34 years.	Sweating Sheds.	10 years.

Description of Condition.

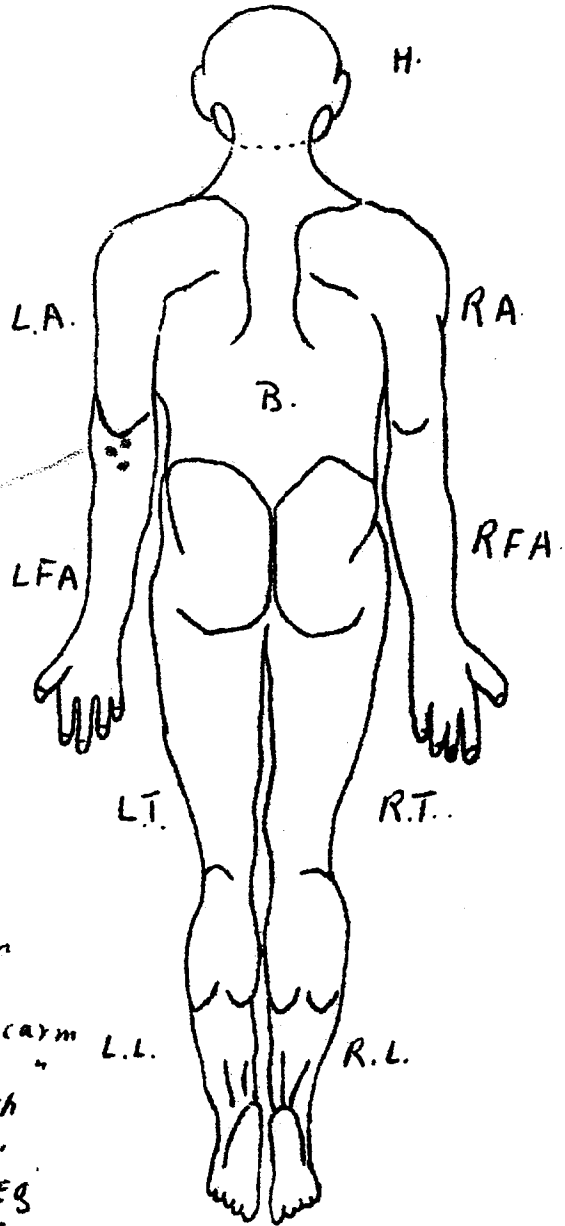
L.F.A. One papular wart ulnar side left wrist.
 Three small papules behind left elbow.

Group. 2.

Front.



Back.



- H. Head
- F. Face.
- Ch. Chest.
- B. Back.
- A. Abdomen
- R.A. Right Arm
- L.A. Left "
- R.FA. Right Forearm
- L.FA. Left " "
- R.T. Right Thigh
- L.T. Left " "
- R.L. Right Leg
- L.L. Left leg.

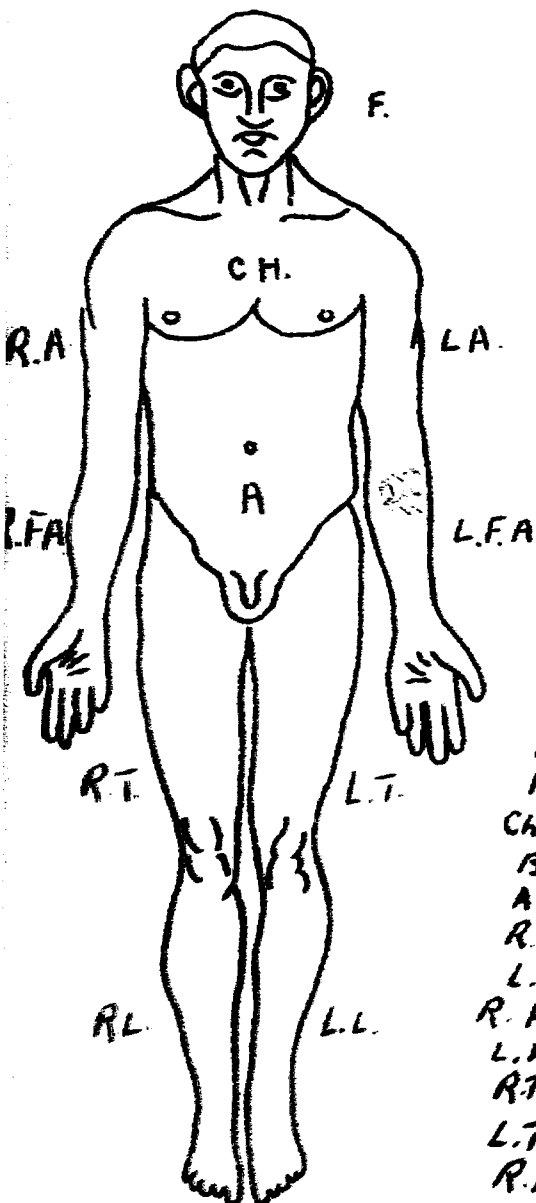
<u>Name.</u>	<u>Age.</u>	<u>Occupation.</u>	<u>Length of Service.</u>
(P.)	23 years.	Paraffin Sheds.	3½ years.

Description of Condition.

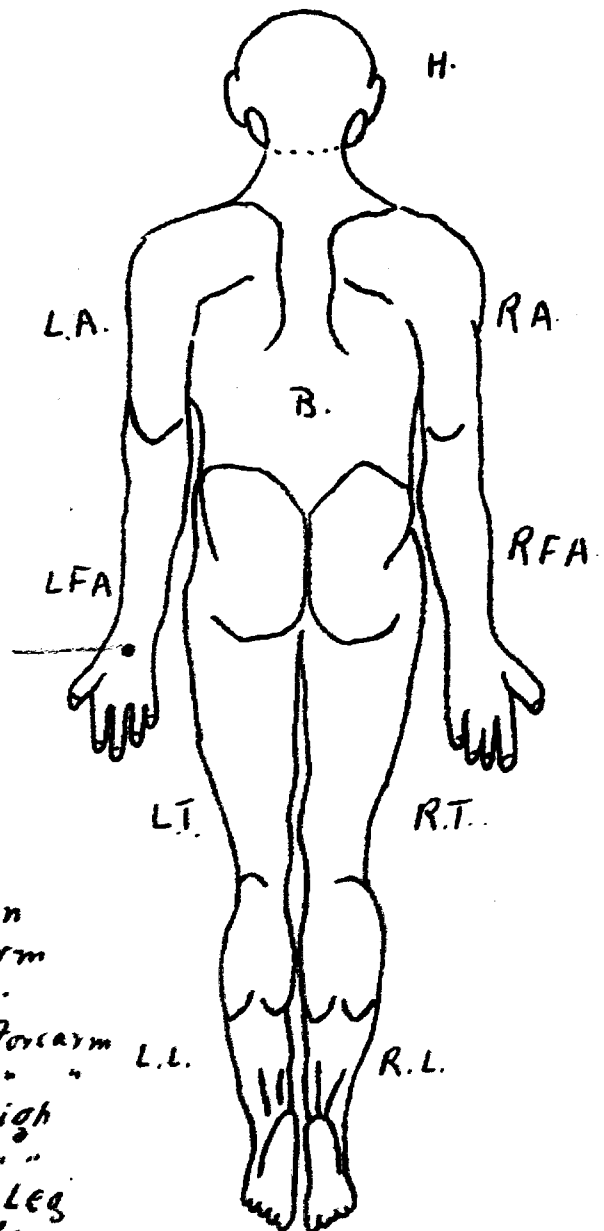
L.A. Sebaceous cysts over front left elbow.
One warty papule dorsum of left hand.

Group. 2.

Front.



Back.



H. Head
F. Face.
Ch. Chest.
B. Back.
A. Abdomen
R.A. Right Arm
L.A. Left "
R.F.A. Right Forearm
L.F.A. Left "
R.T. Right Thigh
L.T. Left "
R.L. Right Leg
L.L. Left leg.

Name. Age. Occupation. Length of Service.

(P.) 46 years. Paraffin Sheds. 12 years.

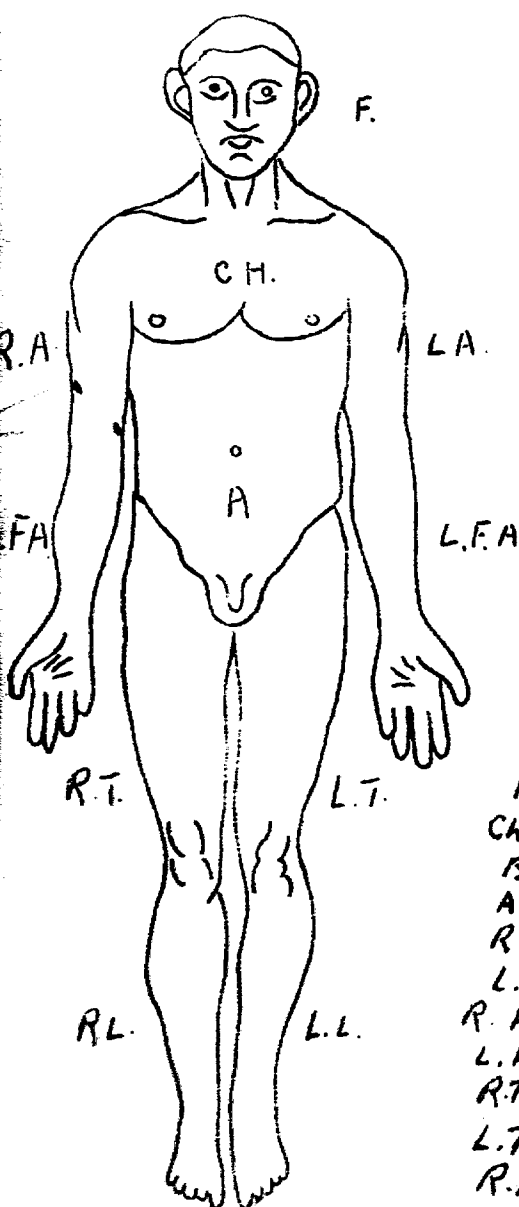
Description of Condition.

R.F.A. & L.F.A. A few papules over backs of both hands, left being slightly worse than right.

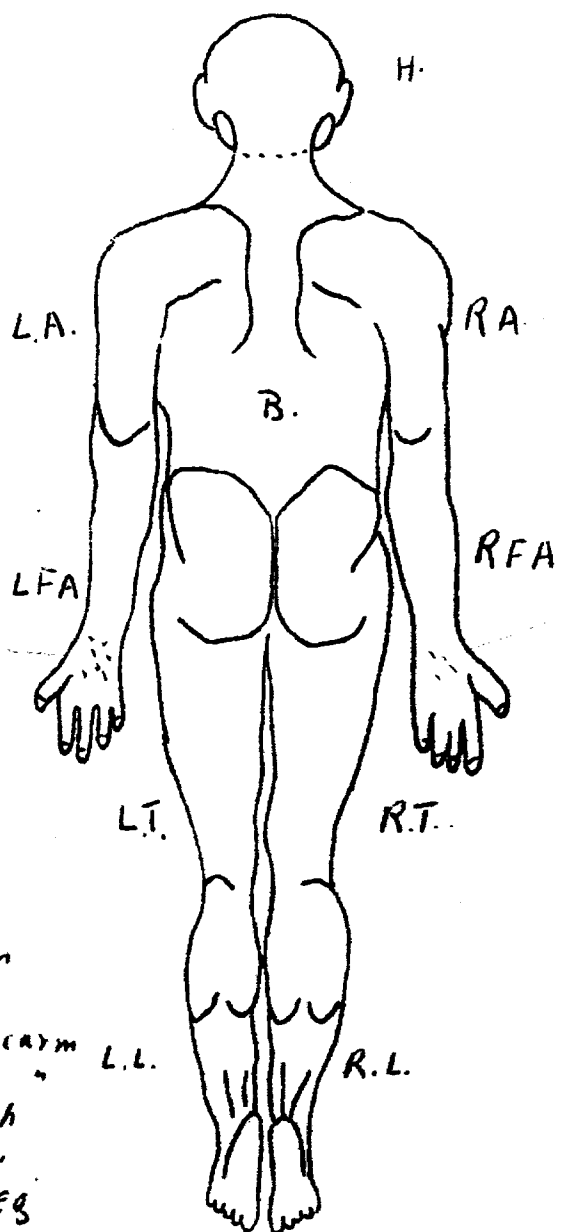
R.A. One papule outer side upper third.
One to the inner side of biceps.

Group. 2.

Front.



Back.



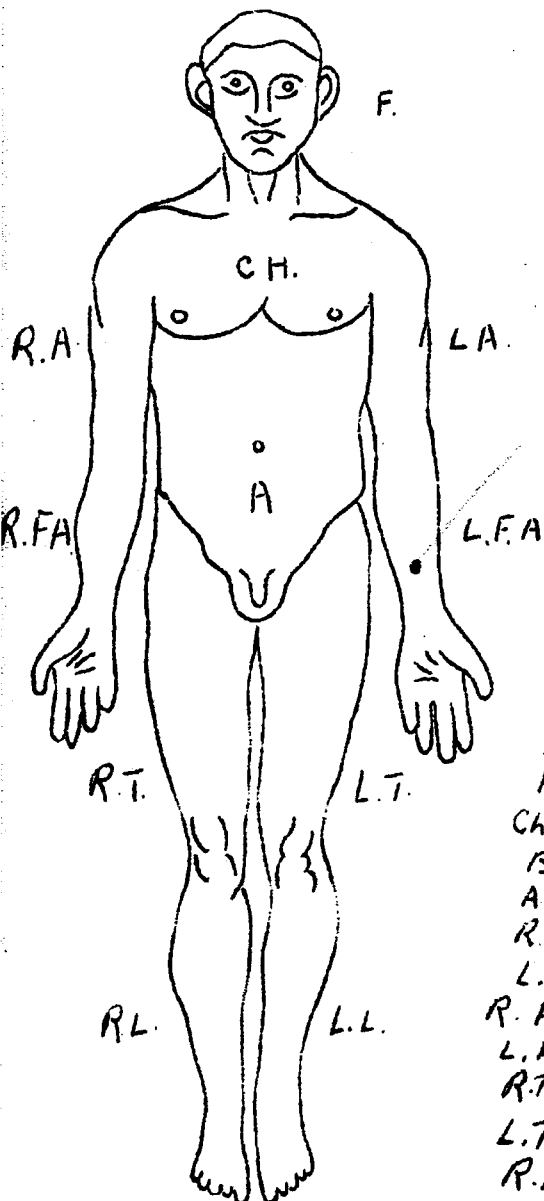
H. Head
F. Face.
Ch. Chest.
B. Back.
A. Abdomen
R.A. Right Arm
L.A. Left "
R.F.A. Right Forearm
L.F.A. Left " "
R.T. Right Thigh
L.T. Left " "
R.L. Right Leg
L.L. Left leg.

<u>Name.</u>	<u>Age.</u>	<u>Occupation.</u>	<u>Length of Service.</u>
F. (P.)	33 years.	Paraffin Sheds.	8 years.

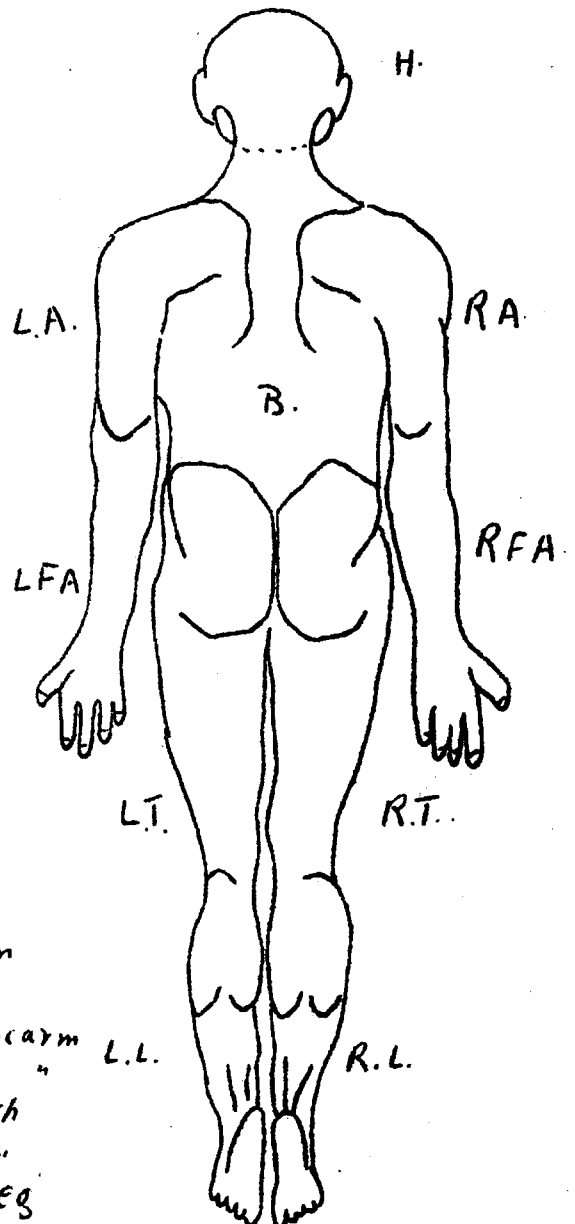
Description of Condition. L.F.A. Small pustule middle anteriorly.

Group. 2.

Front.



Back.



H. Head
 F. Face.
 CH. Chest.
 B. Back.
 A. Abdomen
 R.A. Right Arm
 L.A. Left "
 R.FA. Right Forearm
 L.FA. Left " "
 R.T. Right Thigh
 L.T. Left " "
 R.L. Right Leg
 L.L. Left leg.

Name. Age. Occupation. Length of Service.

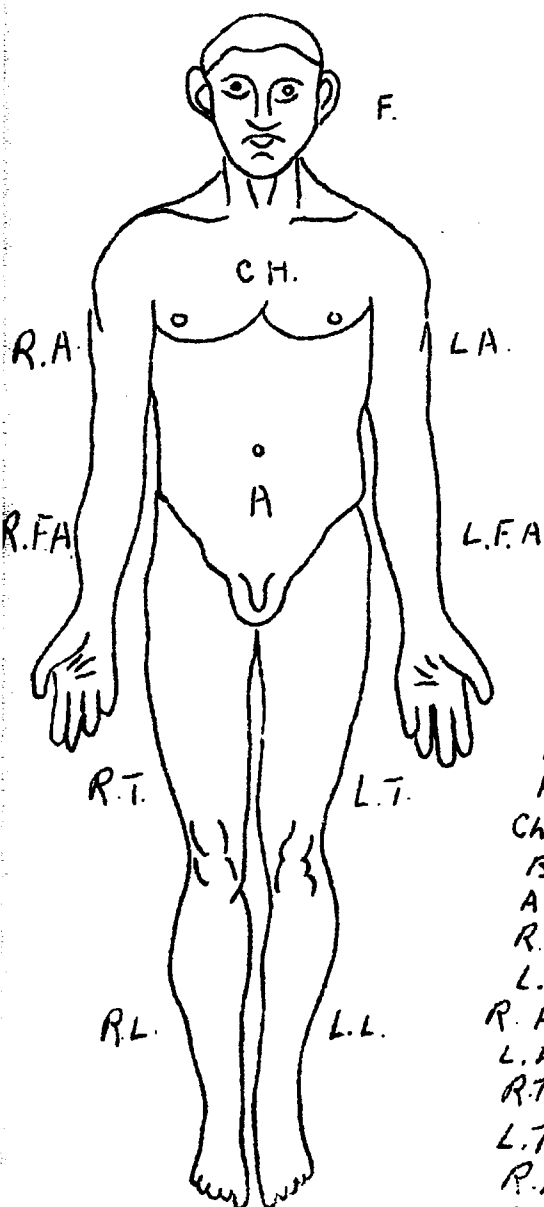
(P.) 54 years. Paraffin Sheds. 25 years.

Description of Condition.

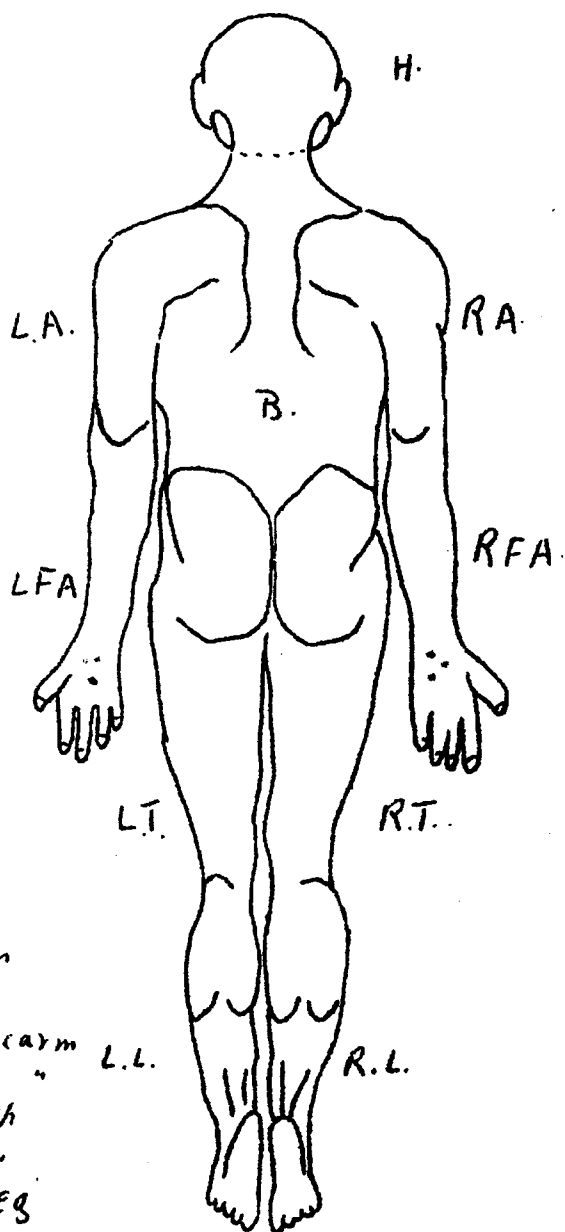
Three small papules dorsum of each hand.

Group. 2.

Front.



Back.



H. Head
F. Face.
CH. Chest.
B. Back.
A. Abdomen
R.A. Right arm
L.A. Left "
R.FA. Right Forearm
L.FA. Left " "
R.T. Right Thigh
L.T. Left " "
R.L. Right Leg
L.L. Left leg.

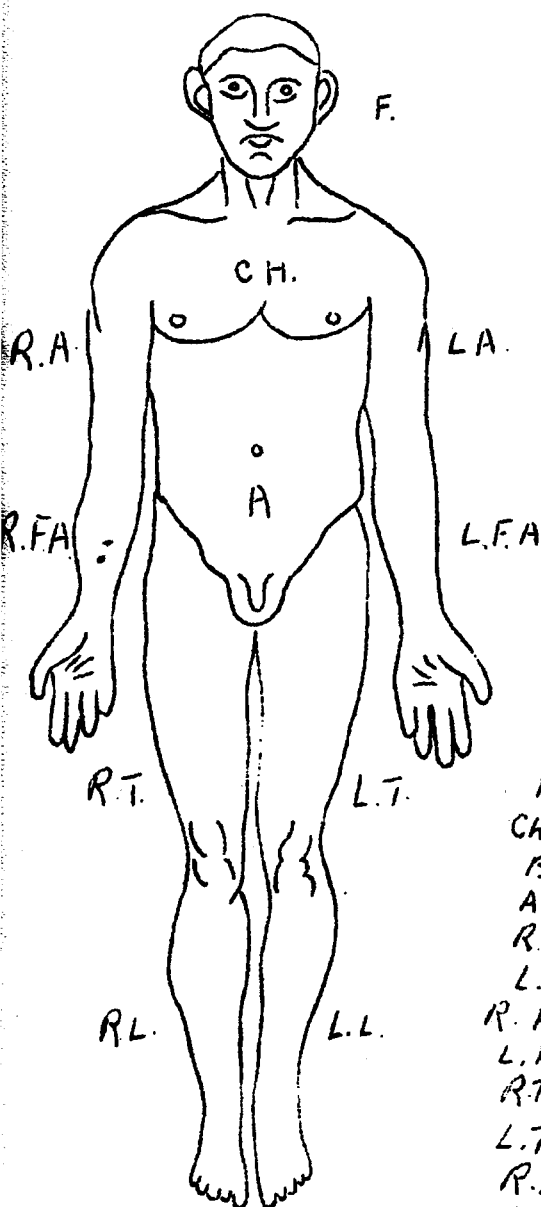
Name. Age. Occupation. Length of Service.

W. (P.) 42 years. Paraffin Sheds. 5 years.

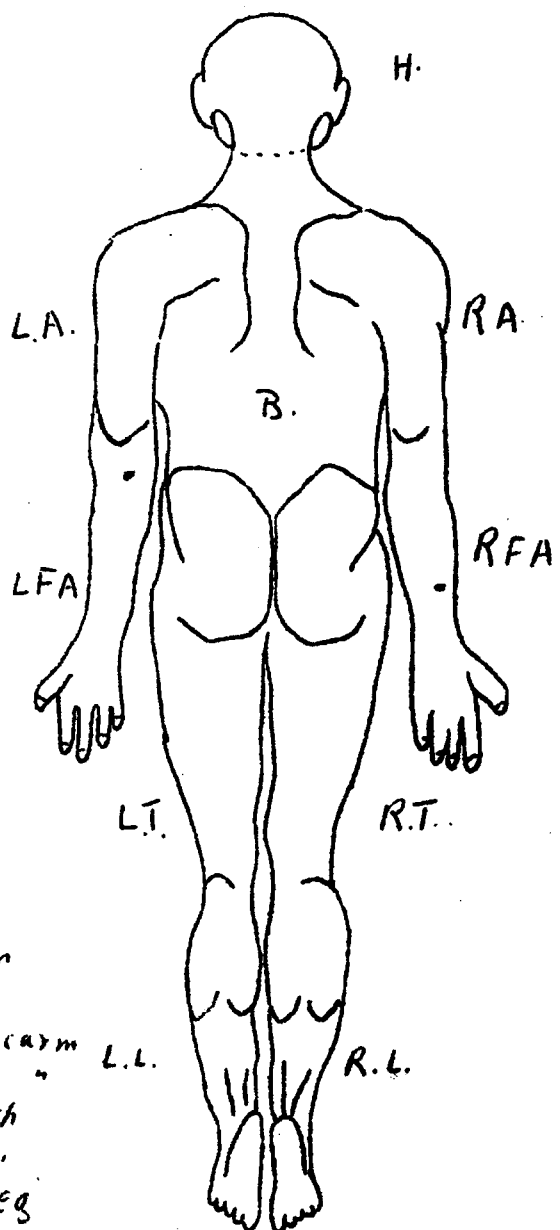
Description of Condition. R.F.A. One small papule posterior surface, two small papules anteriorly.
 L.F.A. One small papule behind elbow.

Group. 2.

Front.



Back.



H. Head
 F. Face.
 CH. Chest.
 B. Back.
 A. Abdomen
 R.A. Right arm
 L.A. Left "
 R.F.A. Right Forearm
 L.F.A. Left " "
 R.T. Right Thigh
 L.T. Left " "
 R.L. Right Leg
 L.L. Left leg.

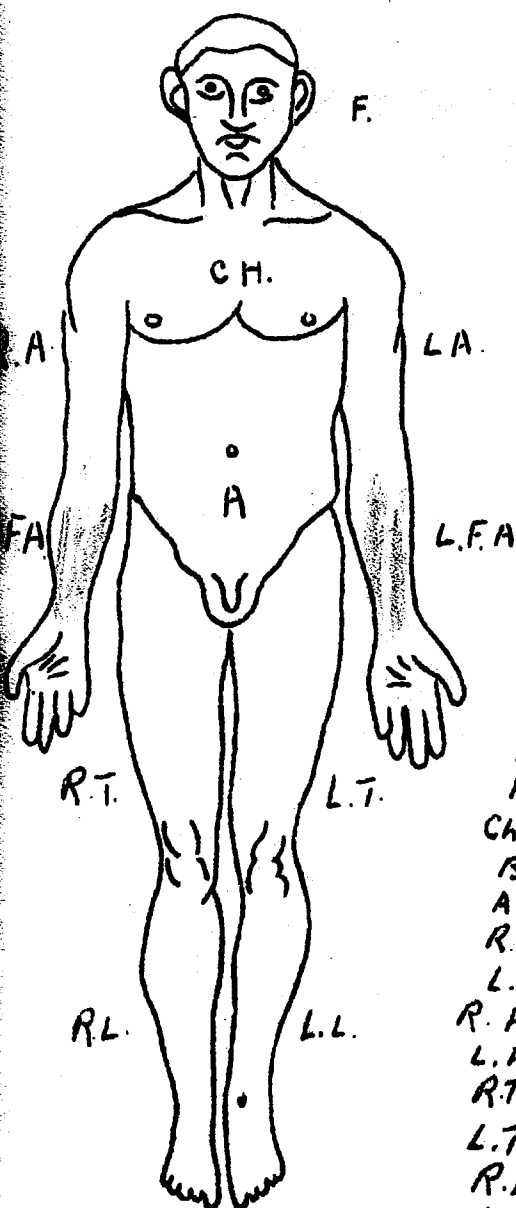
Name. Age. Occupation. Length of Service.
 McCrae. (0) 67 yrs. Fitter, Green Sheds. 22 years.

Description of Condition. Healed erythem. dermatitis front & back of forearms.
 A few small warty papules and scales forearms.
 One small papule front of left ankle.

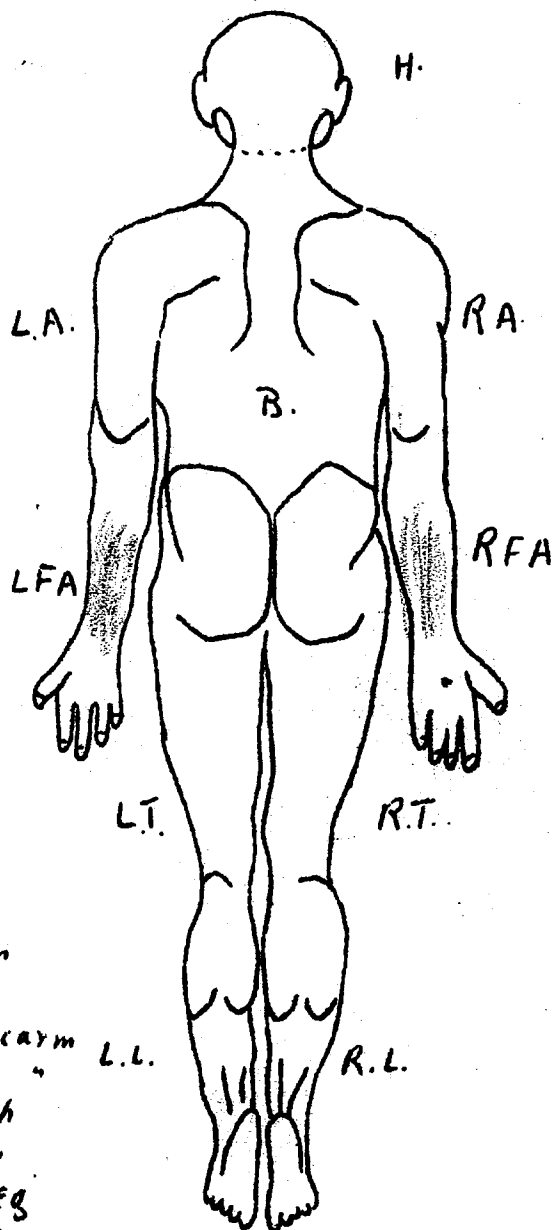
Group.

2.

Front.



Back.



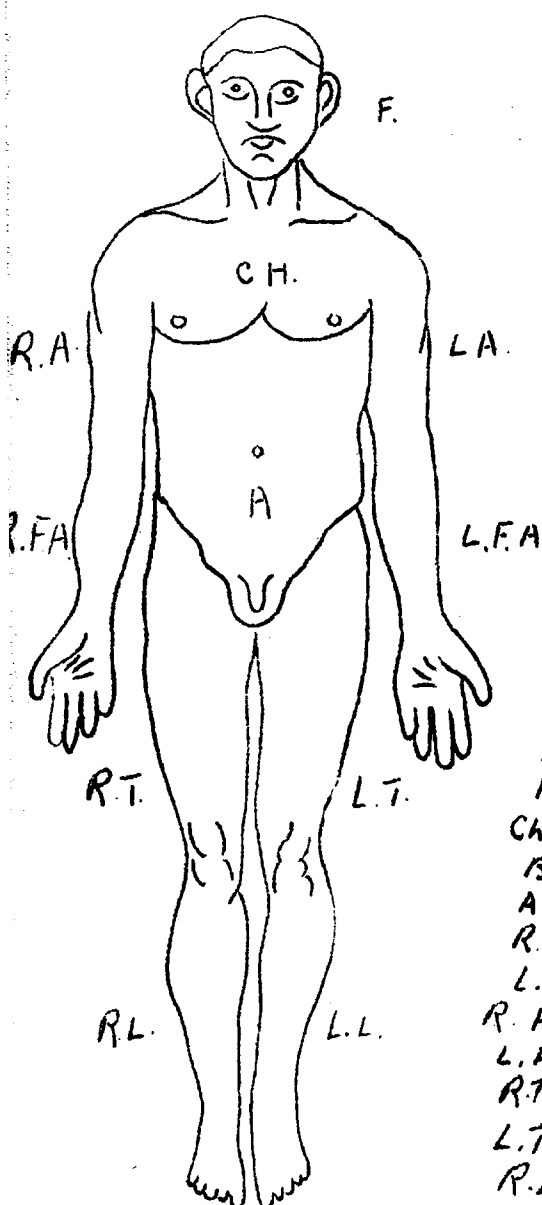
H. Head
 F. Face
 CH. Chest
 B. Back
 A. Abdomen
 R.A. Right Arm
 L.A. Left "
 R.F.A. Right Forearm
 L.F.A. Left "
 R.T. Right Thigh
 L.T. Left "
 R.L. Right Leg
 L.L. Left leg.

<u>Name.</u>	<u>Age.</u>	<u>Occupation.</u>	<u>Length of Service.</u>
D.T. (O).	32 yrs	Paraffin sheds.	6 yrs.

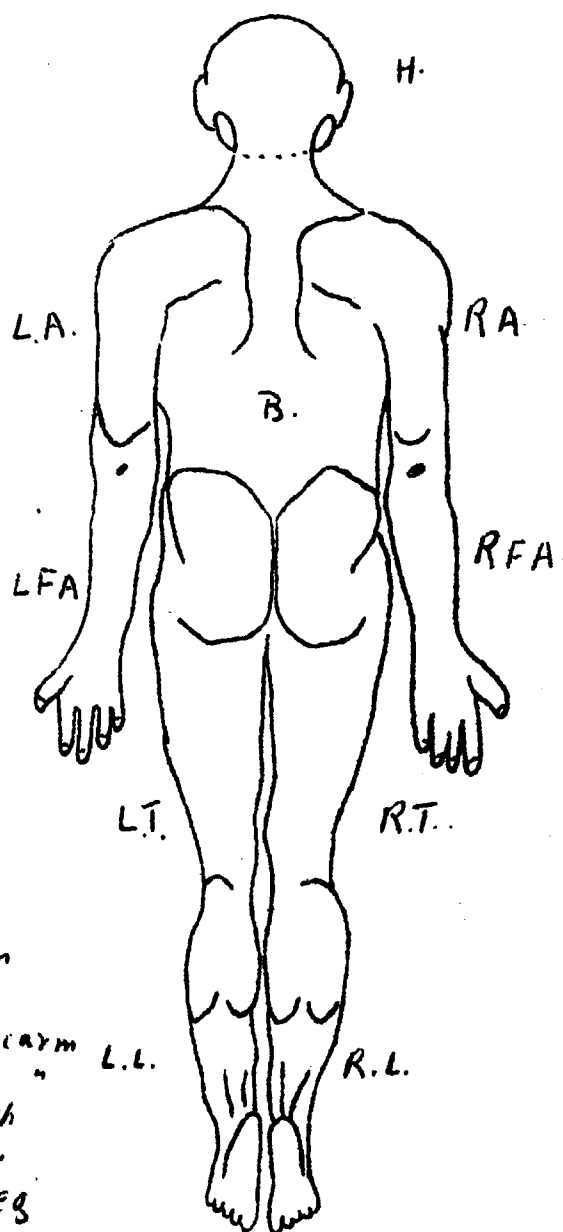
Description of Condition. R.A. and L.A. one papule below each elbow behind.

Group. 2.

Front.



Back.



H. Head
 F. Face.
 Ch. Chest.
 B. Back.
 A. Abdomen
 R.A. Right Arm
 L.A. Left "
 R.FA. Right Forearm
 L.FA. Left " "
 R.T. Right Thigh
 L.T. Left " "
 R.L. Right Leg
 L.L. Left leg.

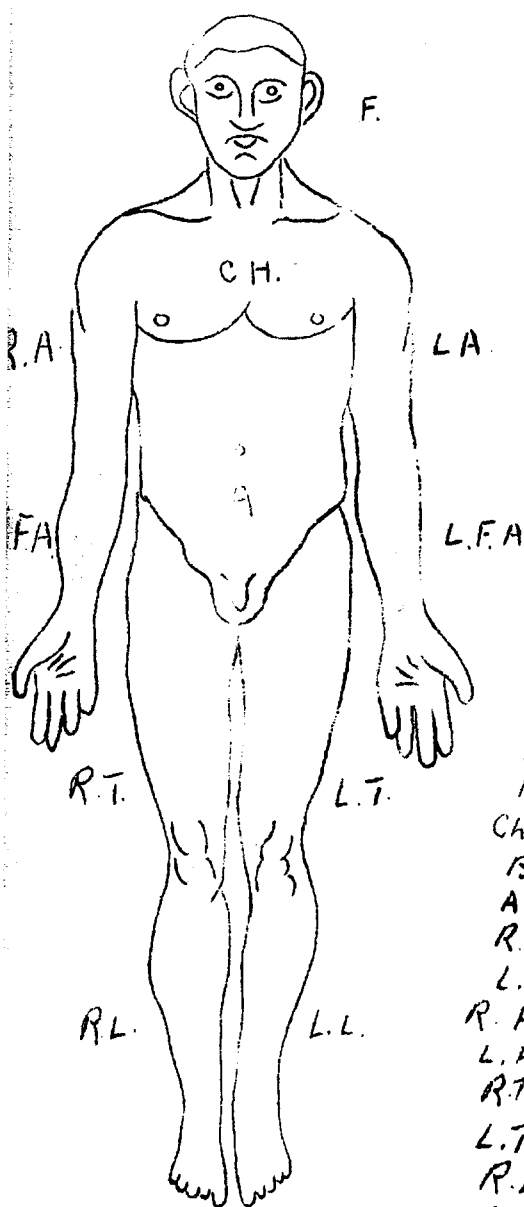
<u>Name.</u>	<u>Age.</u>	<u>Occupation.</u>	<u>Length of Service.</u>
J.T. (O).	32 yrs	Paraffin sheds.	8 yrs.

Description of
condition.

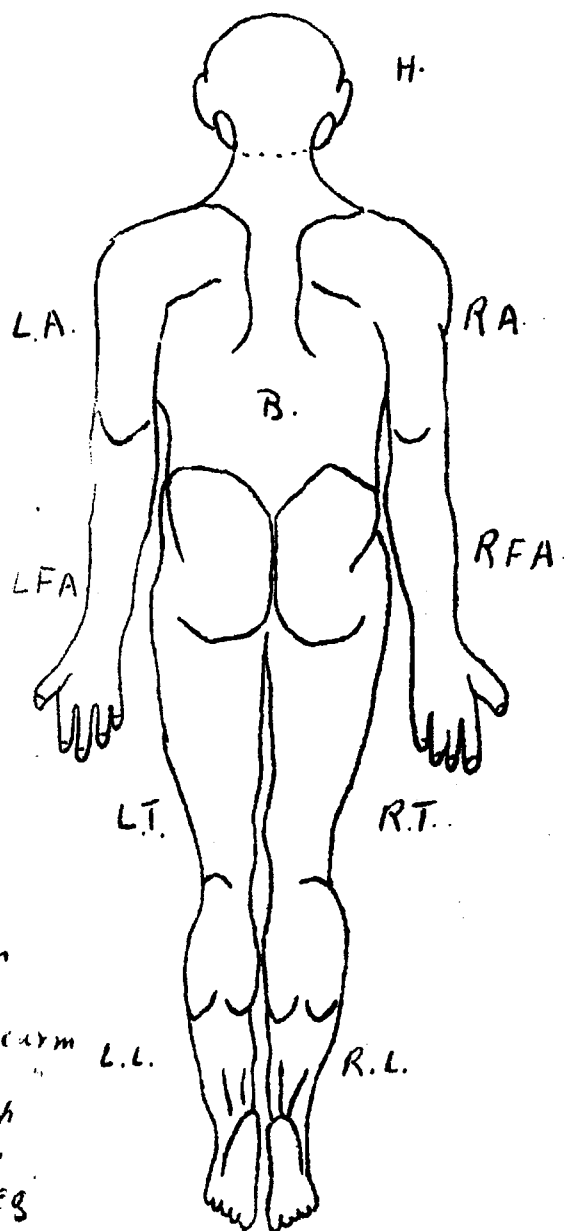
R.F.A. and L.F.A. slight erythema anterior and posterior surfaces

Group. 2

Front.



Back.



H. Head
F. Face.
Ch. Chest
B. Back
A. abdomen
R.A. Right arm
L.A. Left "
R.F.A. Right Forearm
L.F.A. Left " "
R.T. Right Thigh
L.T. Left " "
R.L. Right Leg
L.L. Left leg.

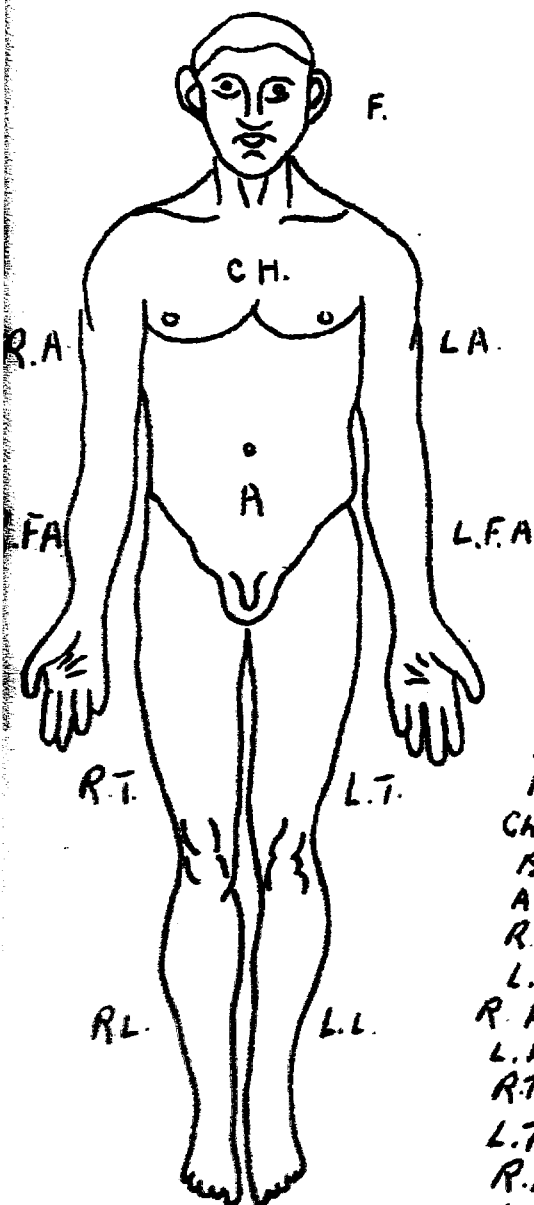
Name. Age. Occupation. Length of Service.
 M.B. (O). 41 yrs Paraffin sheds. 19 yrs.

Description of Condition.

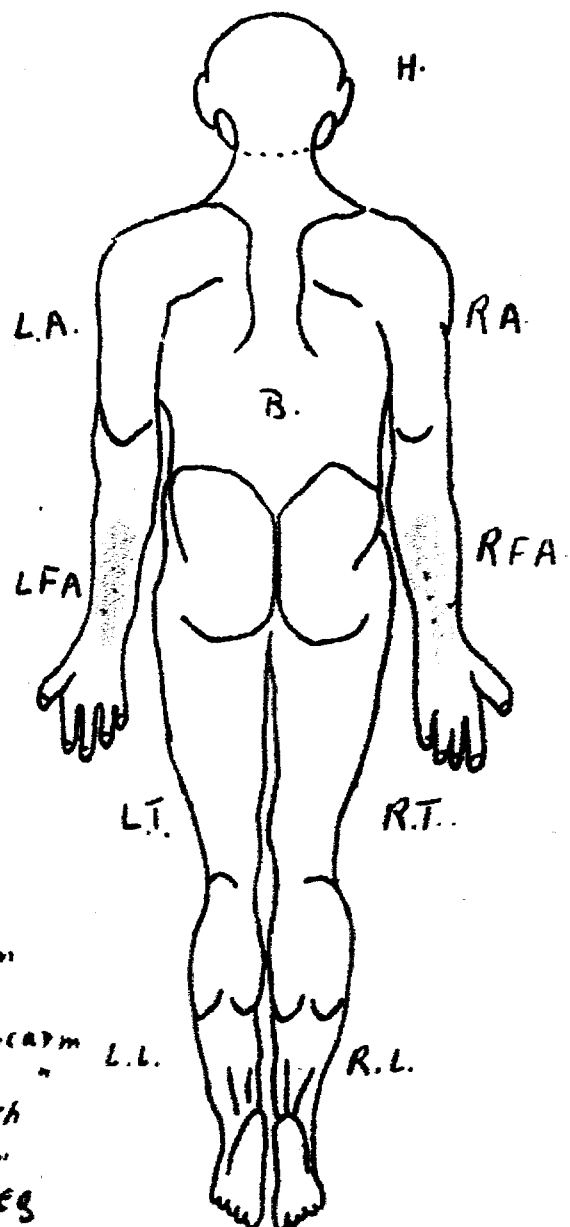
R.F.A. and L.F.A. slight erythema, also a few papules (very small) backs of forearms.

Group. 2.

Front.



Back.



- H. Head
- F. Face.
- CH. Chest
- B. Back
- A. Abdomen
- R.A. Right Arm
- L.A. Left "
- R.F.A. Right Forearm
- L.F.A. Left " "
- R.T. Right Thigh
- L.T. Left " "
- R.L. Right Leg
- L.L. Left leg.

<u>Name.</u>	<u>Age.</u>	<u>Occupation.</u>	<u>Length of Service.</u>
P.C. (O).	37 yrs	Paraffin sheds	Six years

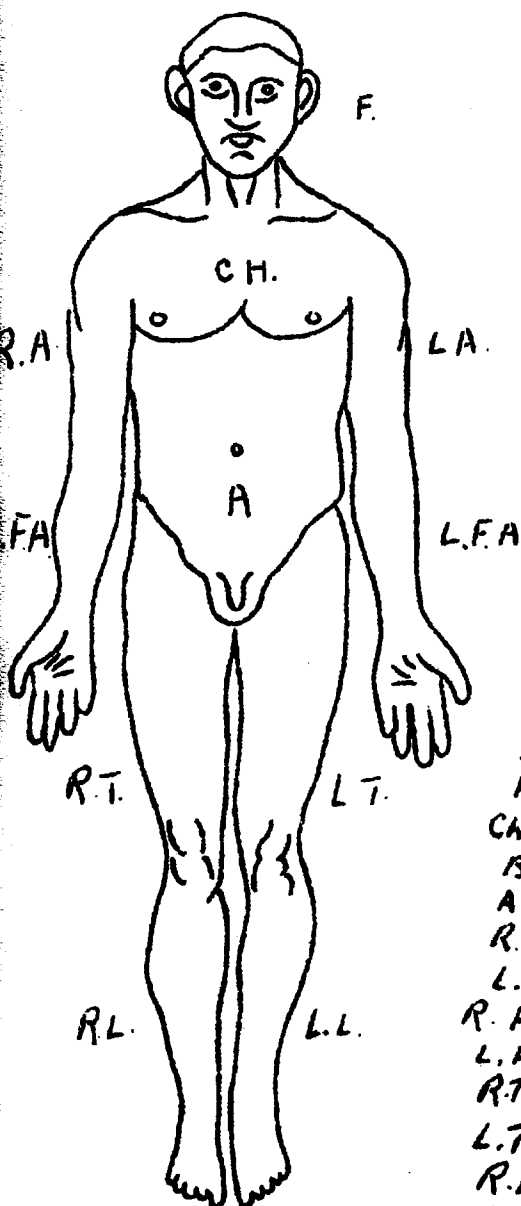
Description of
Condition.

R.F.A. {

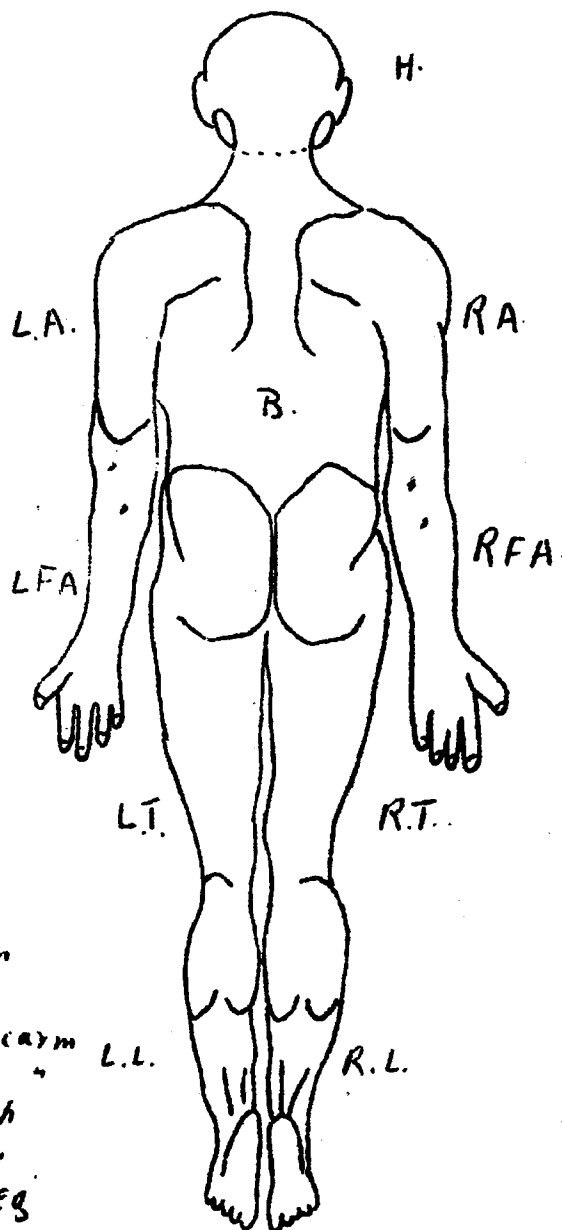
L.F.A. { Two papules on each forearm below elbow
behind

Group. 2

Front.



Back.



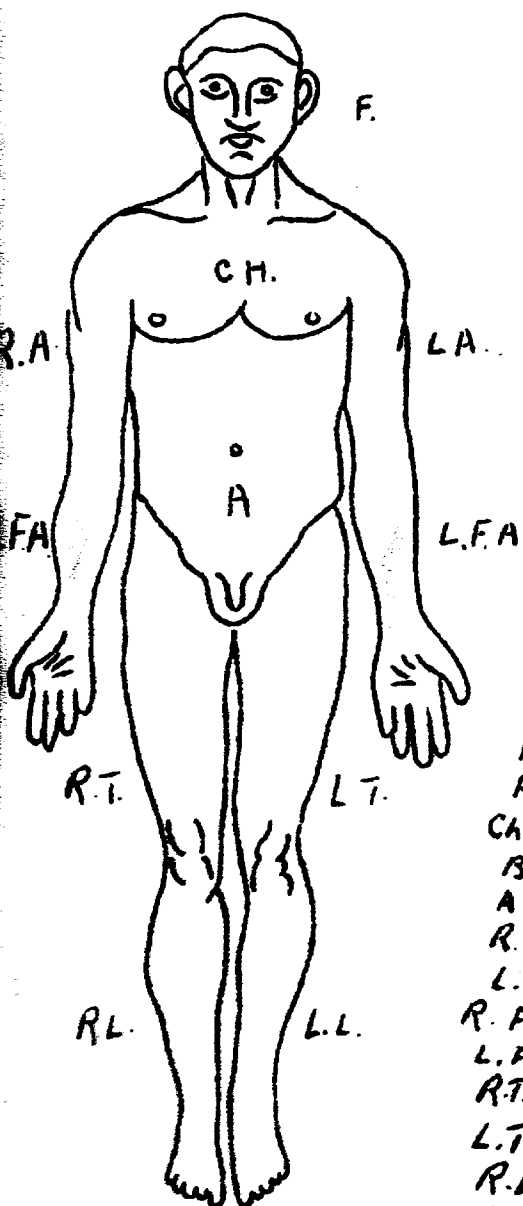
H. Head
F. Face.
Ch. Chest
B. Back
A. Abdomen
R.A. Right Arm
L.A. Left "
R.F.A. Right Forearm
L.F.A. Left " "
R.T. Right Thigh
L.T. Left " "
R.L. Right Leg
L.L. Left leg.

<u>Name.</u>	<u>Age.</u>	<u>Occupation.</u>	<u>Length of Service.</u>
J.F. (O).	23 yrs.	Paraffin sheds	4 yrs.

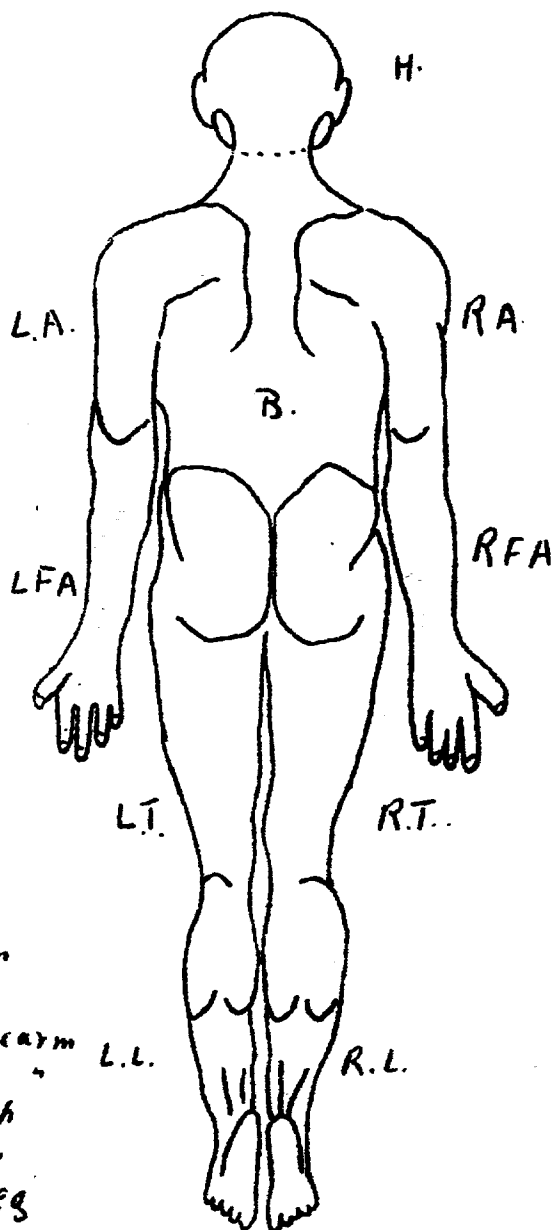
Description of Condition. R.F.A. and L.F.A. Slight erythema fronts and backs.

Group. 2

Front.



Back.



H. Head
 F. Face.
 Ch. Chest.
 B. Back.
 A. Abdomen
 R.A. Right Arm
 L.A. Left "
 R.F.A. Right Forearm
 L.F.A. Left " "
 R.T. Right Thigh
 L.T. Left " "
 R.L. Right Leg
 L.L. Left leg.

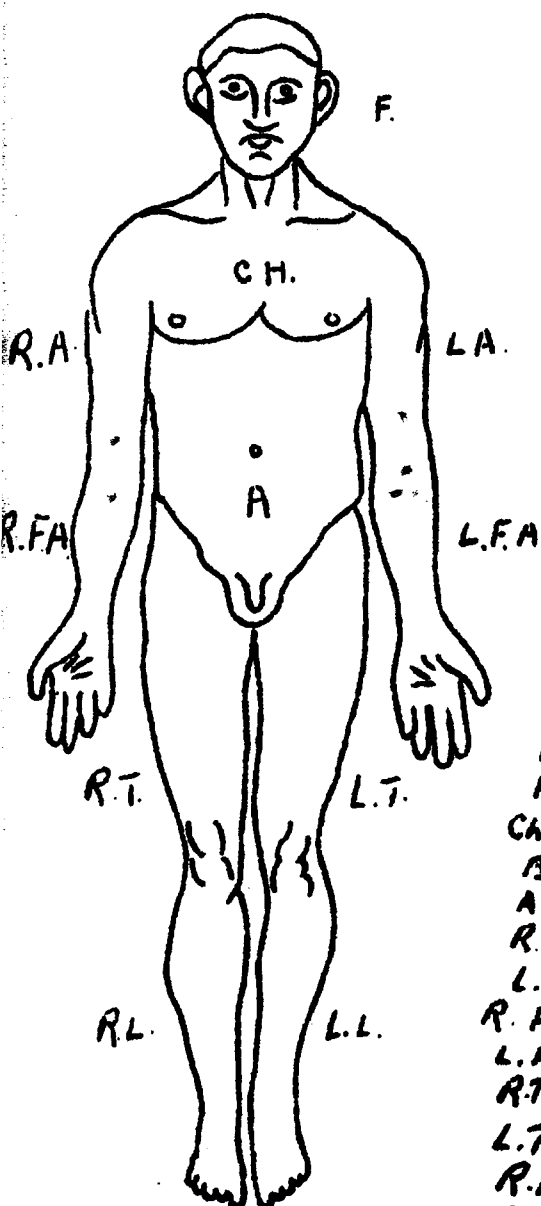
<u>Name.</u>	<u>Age.</u>	<u>Occupation.</u>	<u>Length of Service.</u>
Wilson. (O)	38 yrs	Greensheds.	1 year.

Description of Condition.

R.F.A. 2 papules anterior aspect elbow.
 L.F.A. 2 papules 2" below elbow and 1 papule 1" above elbow, anteriorly.

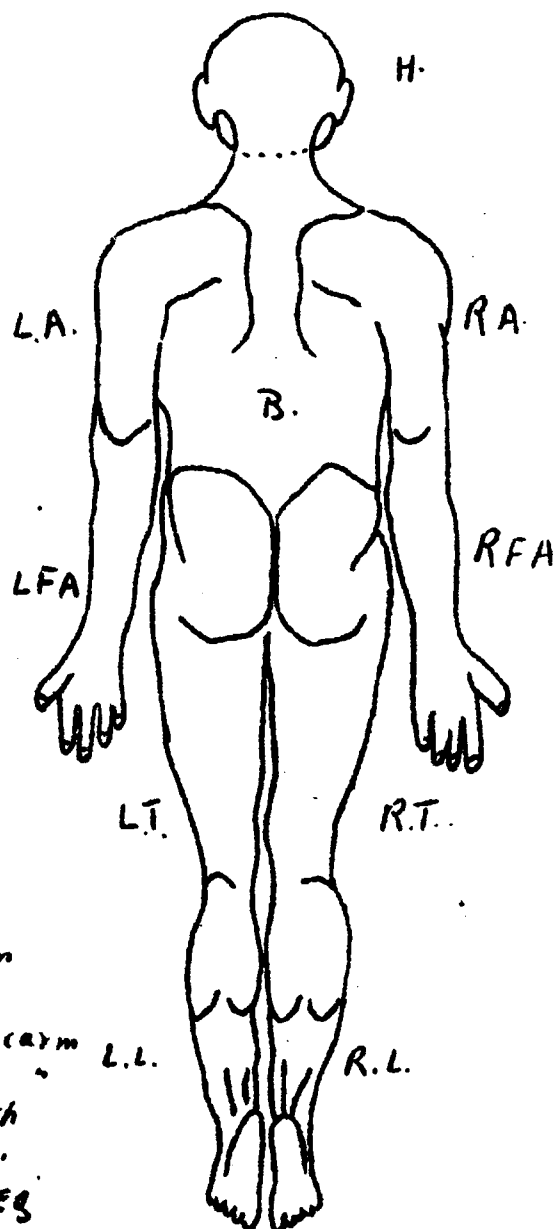
Group.

Front.



2.

Back.



H. Head
 F. Face
 CH. Chest
 B. Back
 A. Abdomen
 R.A. Right Arm
 L.A. Left "
 R.F.A. Right Forearm
 L.F.A. Left "
 R.T. Right Thigh
 L.T. Left "
 R.L. Right Leg
 L.L. Left leg.

Name. Age. Occupation. Length of Service.
 er Cross. (0) 39 yrs. Green Sheds. 8 yrs.

Description of Condition.

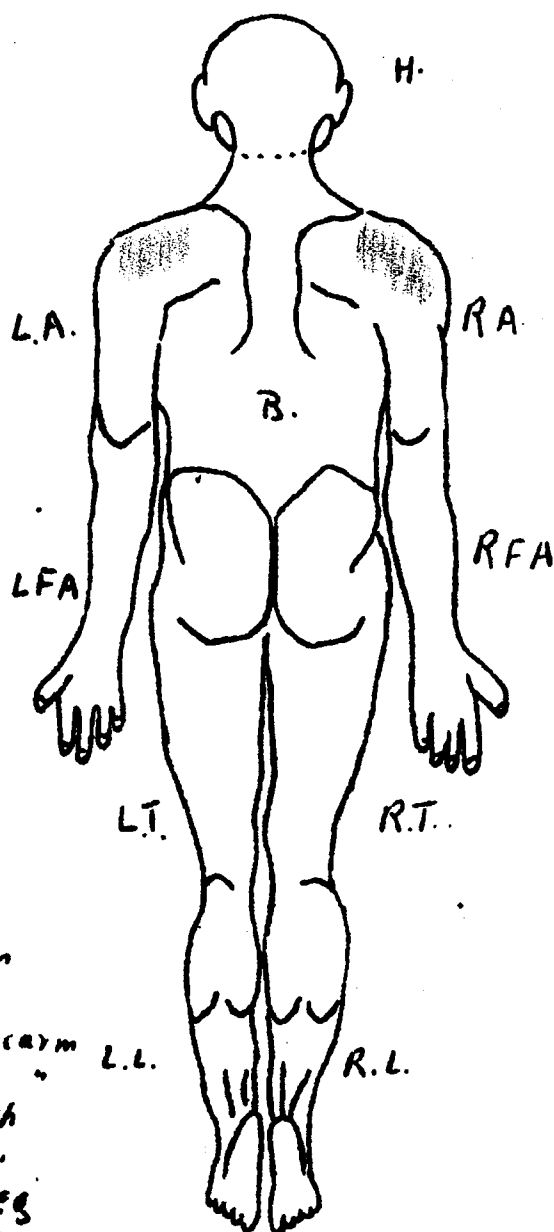
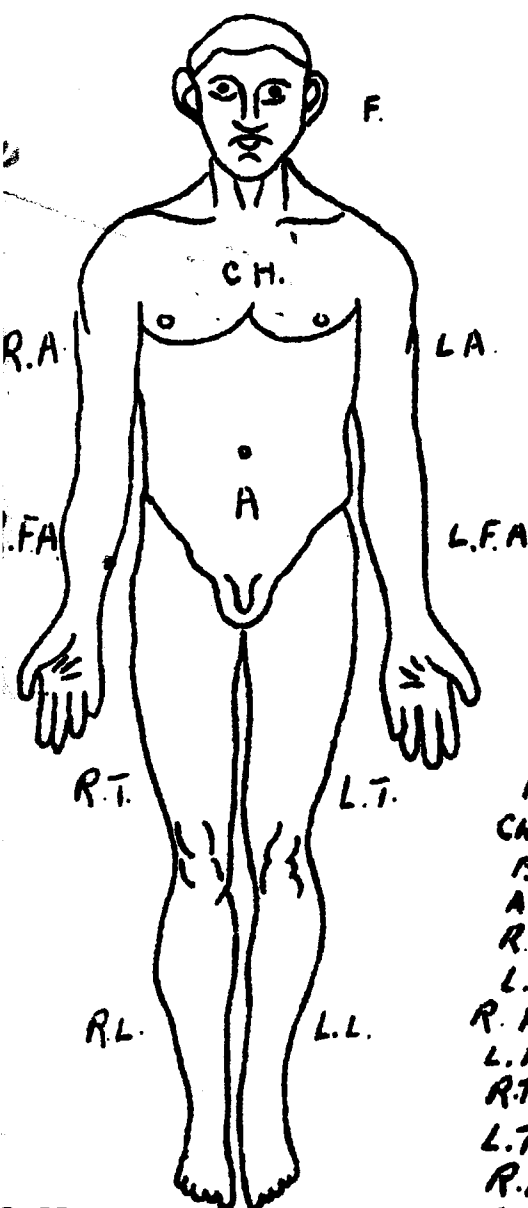
Chest— Slight acne.
 Shoulders— Eryth. dermatitis.
 R.F.A. I papule middle of ulnar border.

Group.

Front.

Back.

2



H. Head
 F. Face.
 CH. Chest.
 B. Back.
 A. Abdomen
 R.A. Right Arm
 L.A. Left "
 R.F.A. Right Forearm
 L.F.A. Left "
 R.T. Right Thigh
 L.T. Left "
 R.L. Right Leg
 L.L. Left leg.

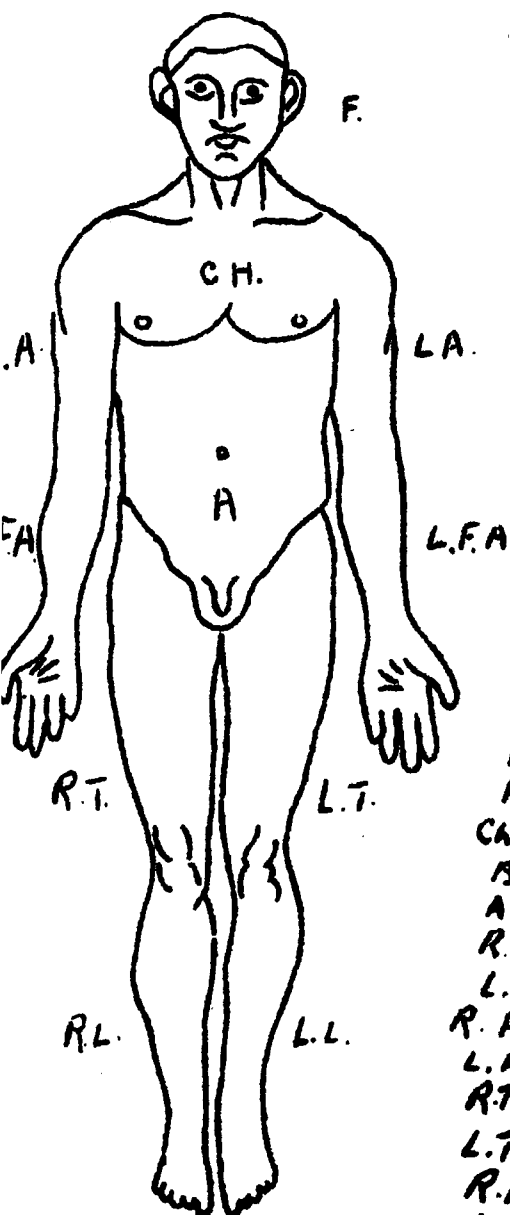
Name. Age. Occupation. Length of Service.
 Jarvis. (0) 58 yrs. GreenSheds. 8 years.

Description of Condition.

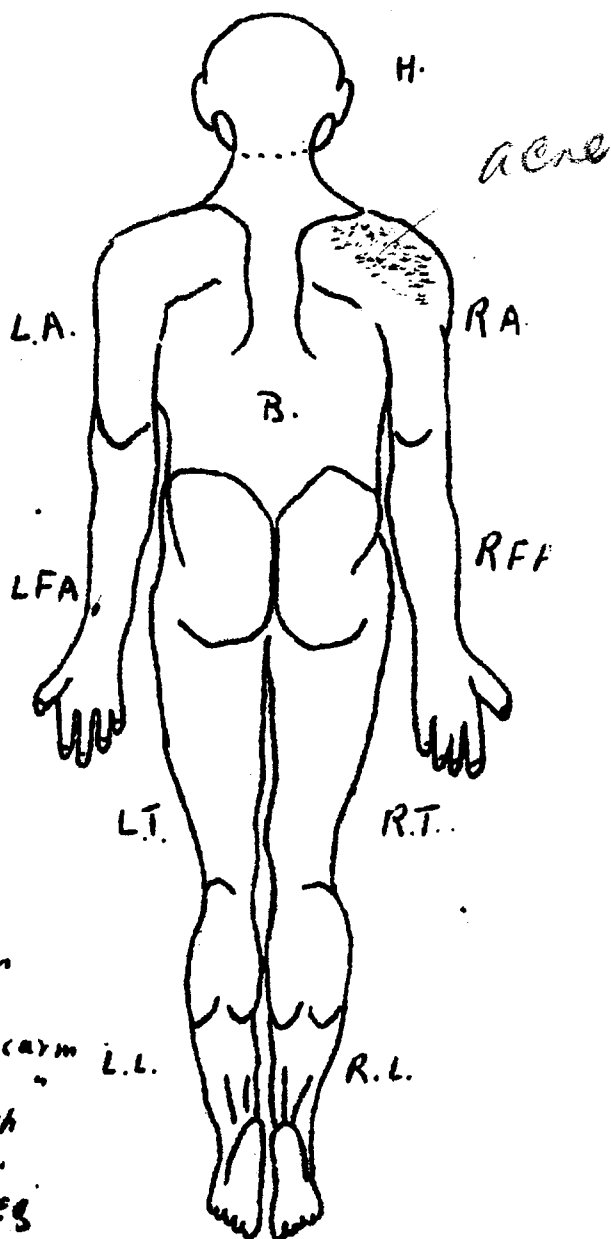
L.F.A. One papule 3" above wrist, radial side.
 slight acne, left shoulder.

Group.

Front.



Back.



H. Head
 F. Face.
 CH. Chest.
 B. Back.
 A. Abdomen
 R.A. Right Arm
 L.A. Left "
 R.F.A. Right Forearm
 L.F.A. Left "
 R.T. Right Thigh
 L.T. Left "
 R.L. Right Leg
 L.L. Left leg.

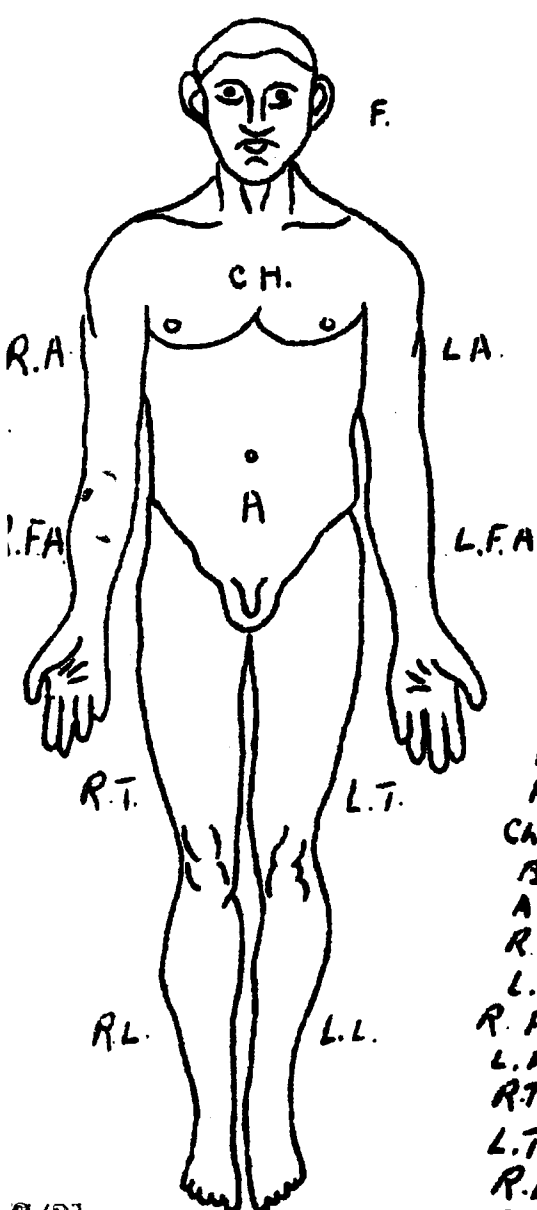
Name. Thomas Scoular, (O) Age. 55 yrs. Occupation. Greensheds. Length of Service. 1 year.

Description of Condition.

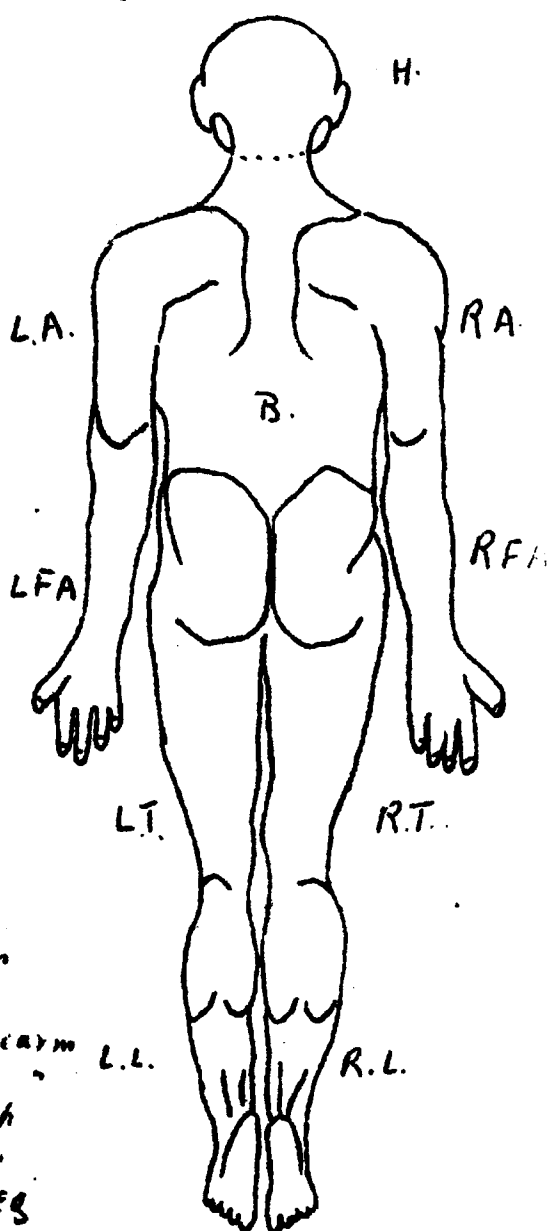
R.F.A. Two papules in front of elbow.

Group.

Front.



Back.



H. Head
F. Face.
CH. Chest.
B. Back.
A. Abdomen
R.A. Right Arm
L.A. Left "
R.F.A. Right Forearm
L.F.A. Left "
R.T. Right Thigh
L.T. Left "
R.L. Right Leg
L.L. Left leg.

9 mos.

One papule dorsum of left foot 2" above base of
big toe.

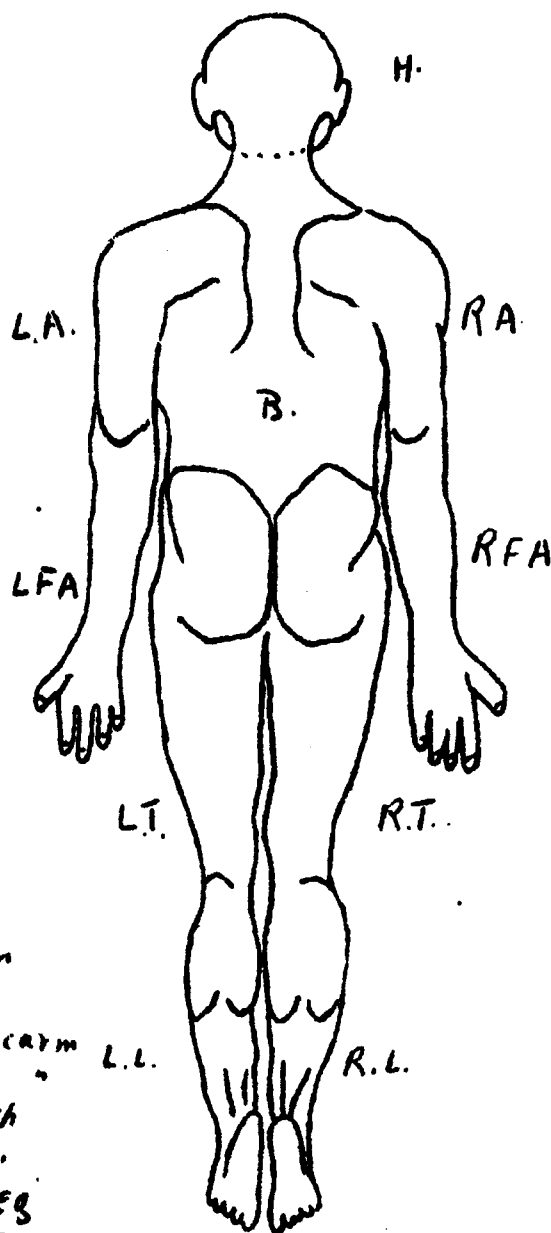
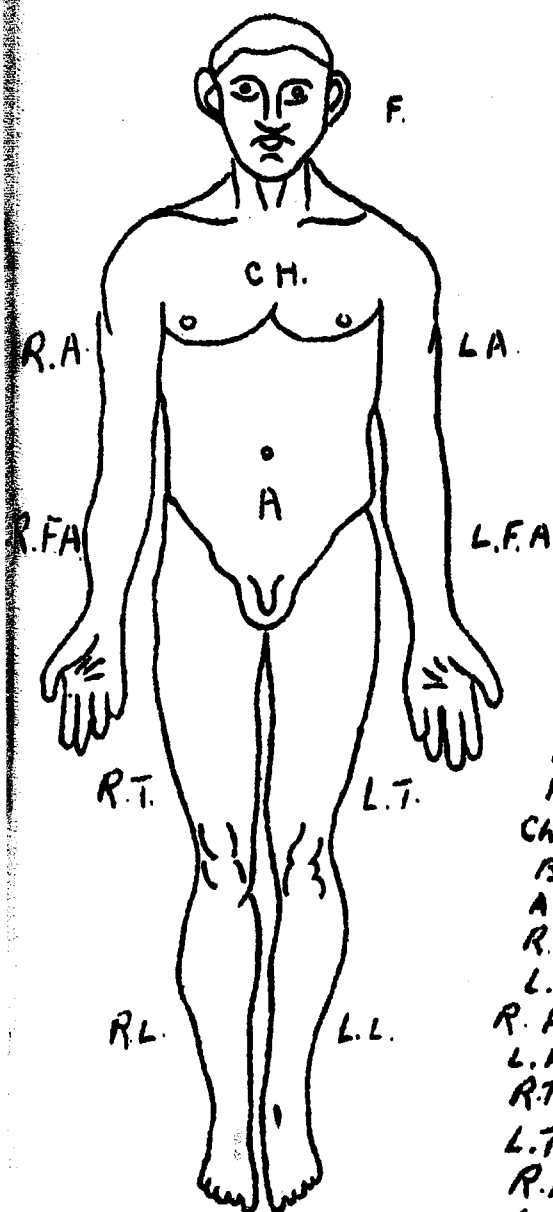
scar over extensor tendon of right big toe.

9 you/b.

Front.

2

Back.



- H. Head
F. Face
Ch. Chest
B. Back
A. Abdomen
R.A. Right Arm
L.A. Left "
R.F.A. Right Forearm L.L.
L.F.A. Left "
R.T. Right Thigh
L.T. Left "
R.L. Right Leg
L.L. Left leg

Name.	Age.	Occupation.	Length of Service.
A.R. (O).	28 yrs	Paraffin sheds	5 yrs.

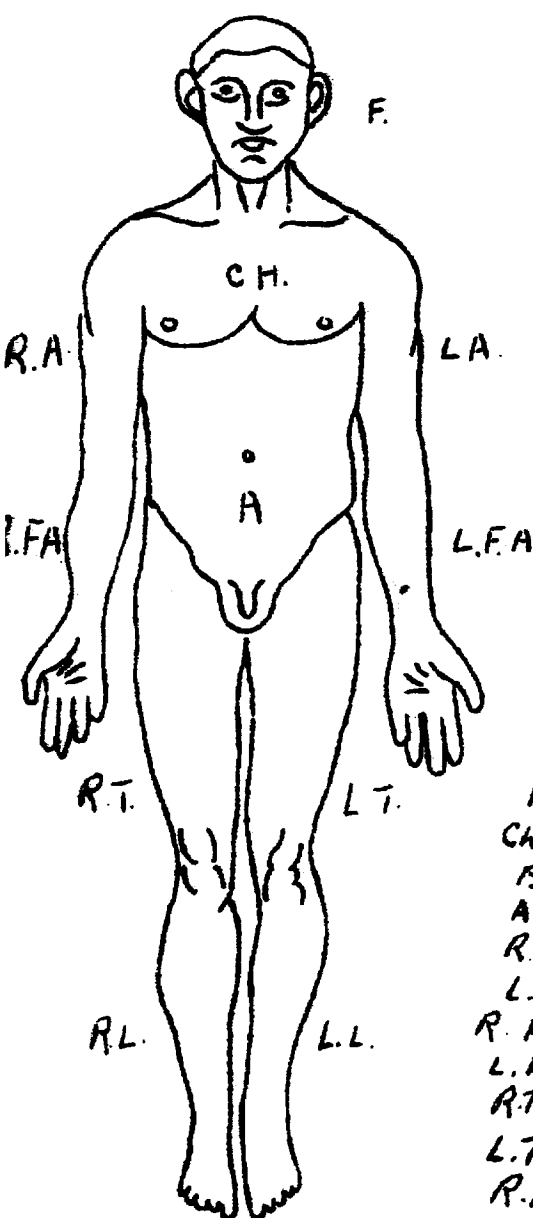
Description of Condition.

R.F.A. and L.F.A. Slight erythema anterior and posterior surfaces both forearms.

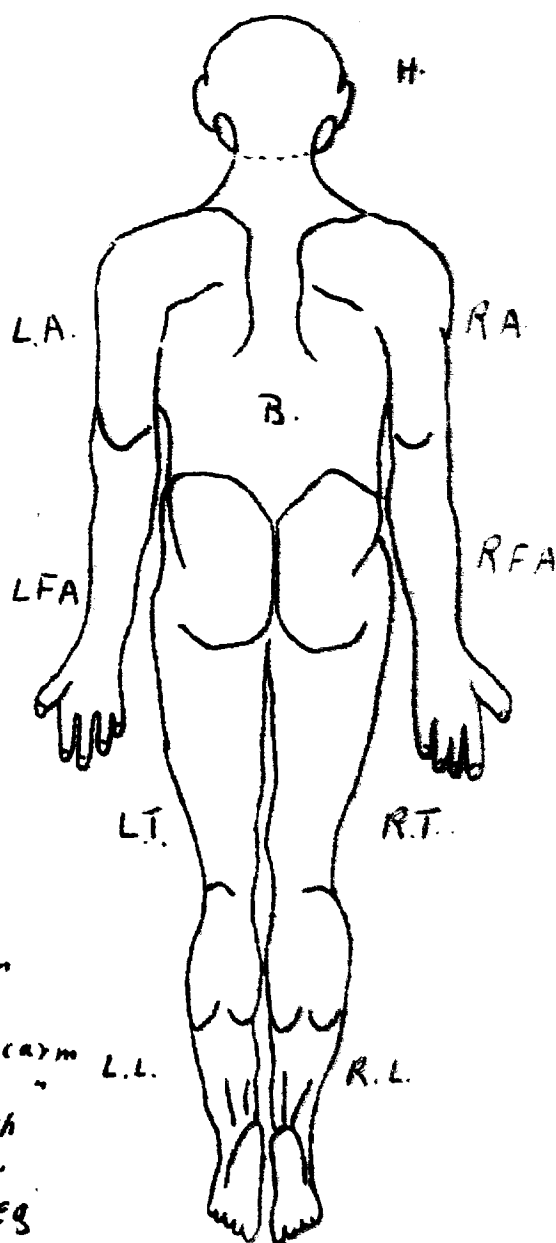
Small papule anterior surface L.F.A.

Group. 2

Front.



Back.



H. Head
 F. Face.
 Ch. Chest
 B. Back
 A. Abdomen
 R.A. Right Arm
 L.A. Left "
 R.F.A. Right Forearm
 L.F.A. Left " "
 R.T. Right Thigh
 L.T. Left " "
 R.L. Right Leg
 L.L. Left leg.

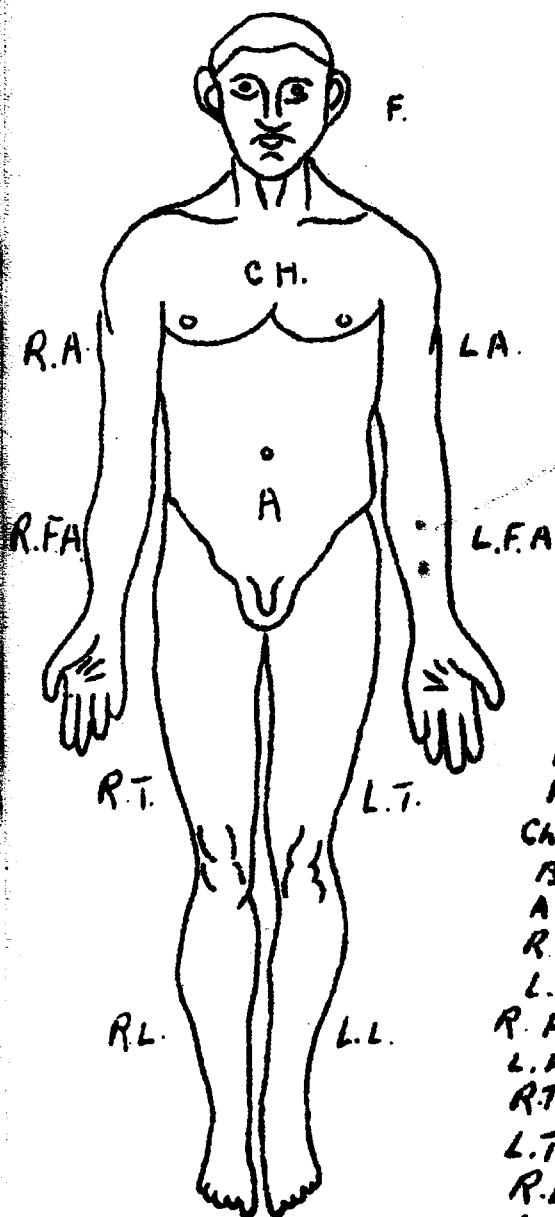
<u>Name.</u>	<u>Age.</u>	<u>Occupation.</u>	<u>Length of Service.</u>
L. (a) (B).	39 years	Paraffin sheds.	5 years.

Description of Condition.

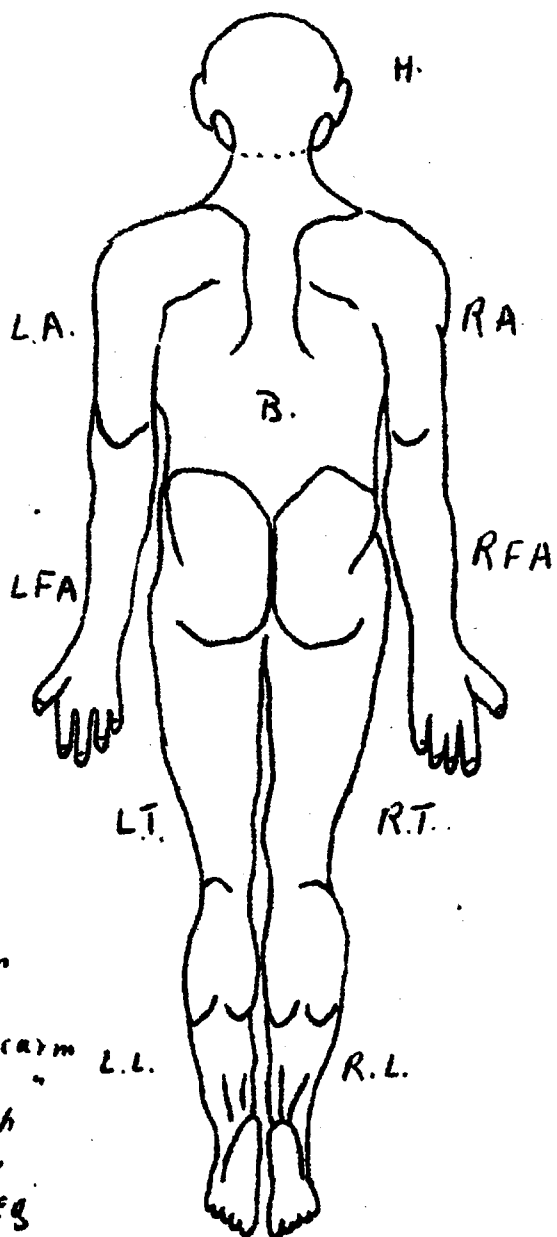
2 warts middle of front L.F.A.

Group. 11.

Front.



Back.



H. Head
 F. Face.
 Ch. Chest.
 B. Back.
 A. Abdomen
 R.A. Right Arm
 L.A. Left "
 R.FA. Right Forearm L.L.
 L.FA. Left "
 R.T. Right Thigh
 L.T. Left "
 R.L. Right Leg
 L.L. Left leg.

Name. Age. Occupation. Length of Service.

(B). 39 years Paraffin sheds . 7 years.

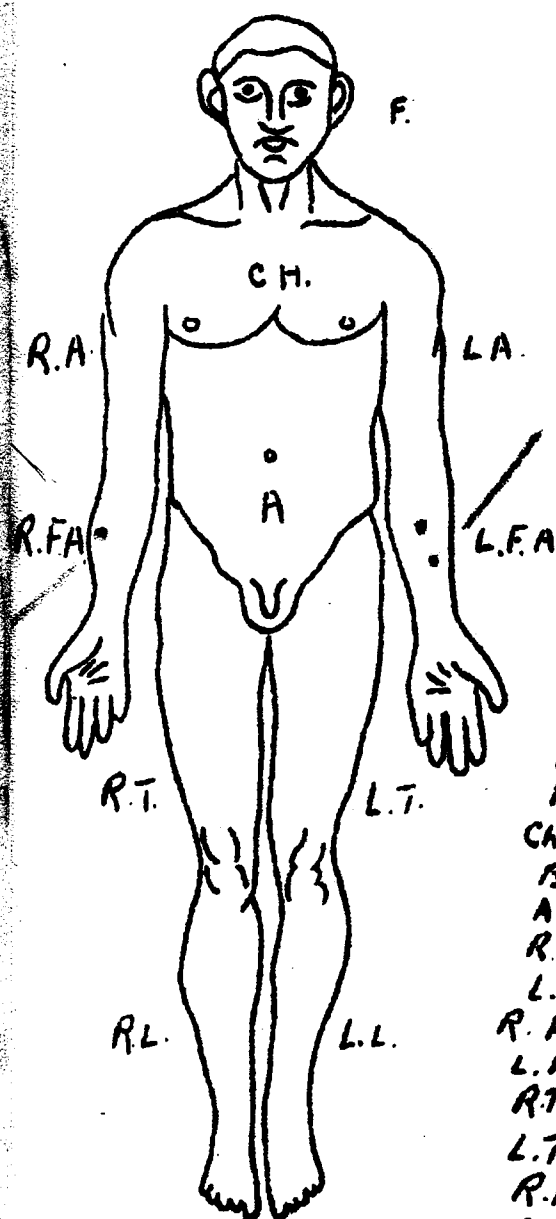
Description of Condition.

Wart outer side R.F.A.

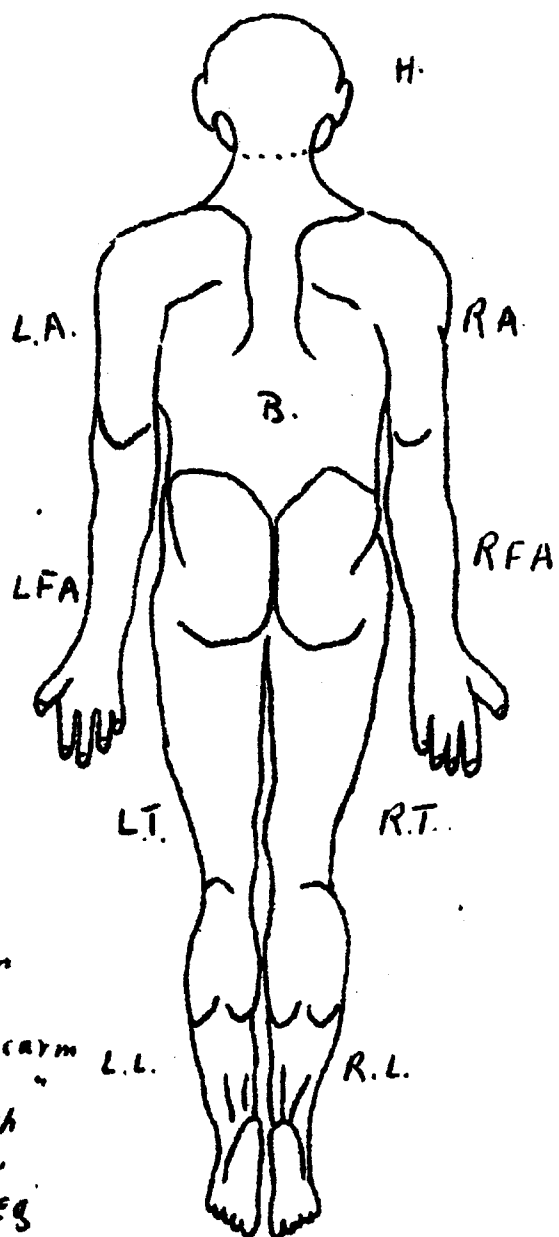
2 Small papules front L.F.A.

Group. 11.

Front.



Back.



H. Head
F. Face
Ch. Chest
B. Back
A. Abdomen
R.A. Right Arm
L.A. Left "
R.F.A. Right Forearm
L.F.A. Left "
R.T. Right Thigh
L.T. Left "
R.L. Right Leg
L.L. Left Leg

<u>Name.</u>	<u>Age.</u>	<u>Occupation.</u>	<u>Length of Service.</u>
T.A. (U).	39 yrs.	Paraffin sheds	20 yrs.

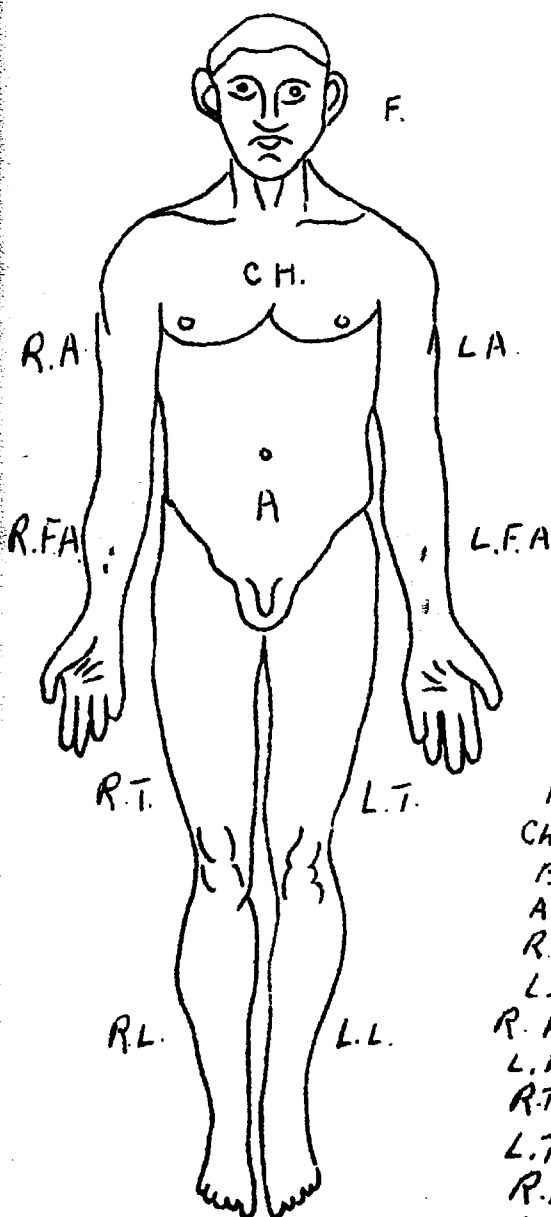
Description of Condition.

R.F.A. {
L.F.A. { Two papules each anteriorly.

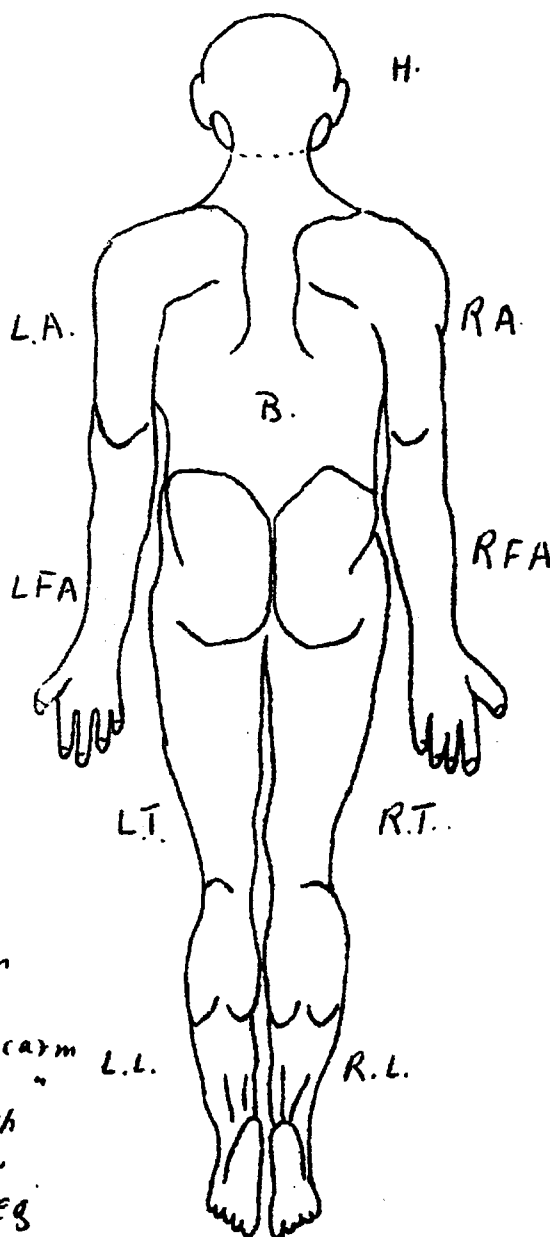
(evidence of healed dermatitis.)

Group. II.

Front.



Back.



H. Head
F. Face
CH. Chest
B. Back
A. Abdomen
R.A. Right Arm
L.A. Left "
R.F.A. Right Forearm
L.F.A. Left "
R.T. Right Thigh
L.T. Left "
R.L. Right Leg
L.L. Left leg.

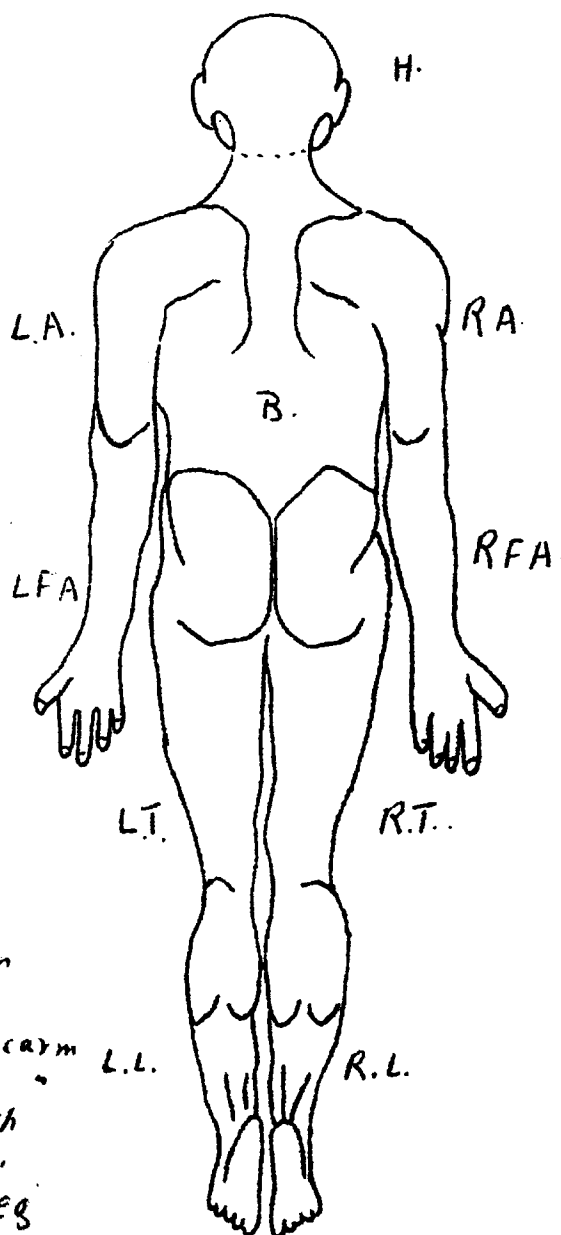
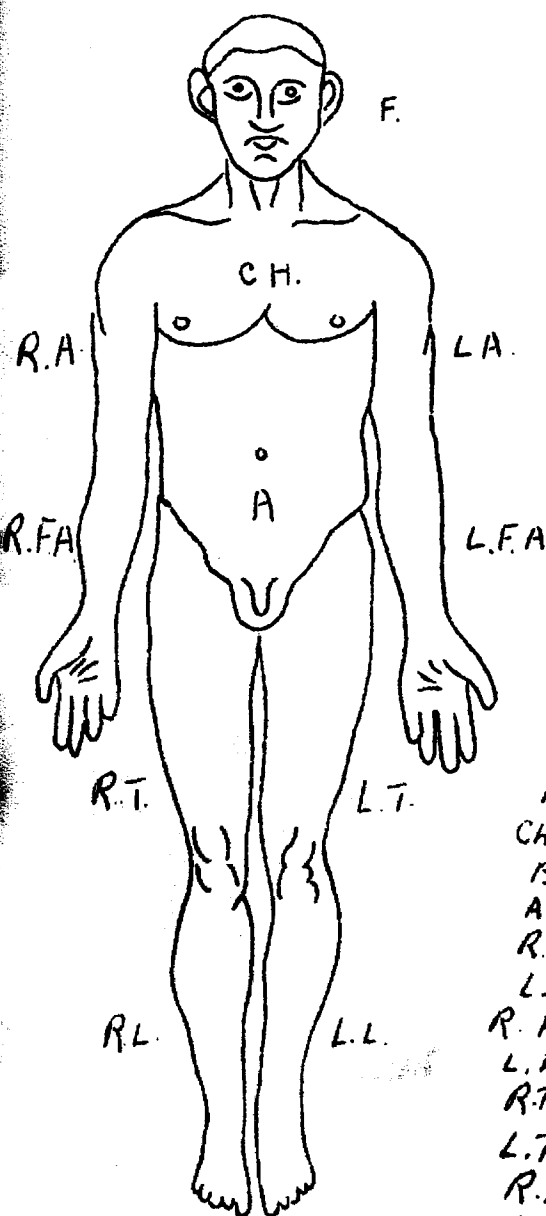
A.A. (U). 33 yrs Paraf, Refinery (sweating sheds) 19 yrs

L.L.. Small ulcer (pressure sore) healing outer aspect ankle, slightly above ankle.

Group. 11.

Front.

Back.



H. Head
F. Face.
Ch. Chest.
B. Back.
A. Abdomen
R.A. Right Arm
L.A. Left "
R.F.A. Right Forearm L.L.
L.F.A. Left "
R.T. Right Thigh
L.T. Left "
R.L. Right Leg
L.L. Left leg.

Name. Age. Occupation. Length of Service.

R.R. (U). 26 years Paraffin sheds. 6 weeks.

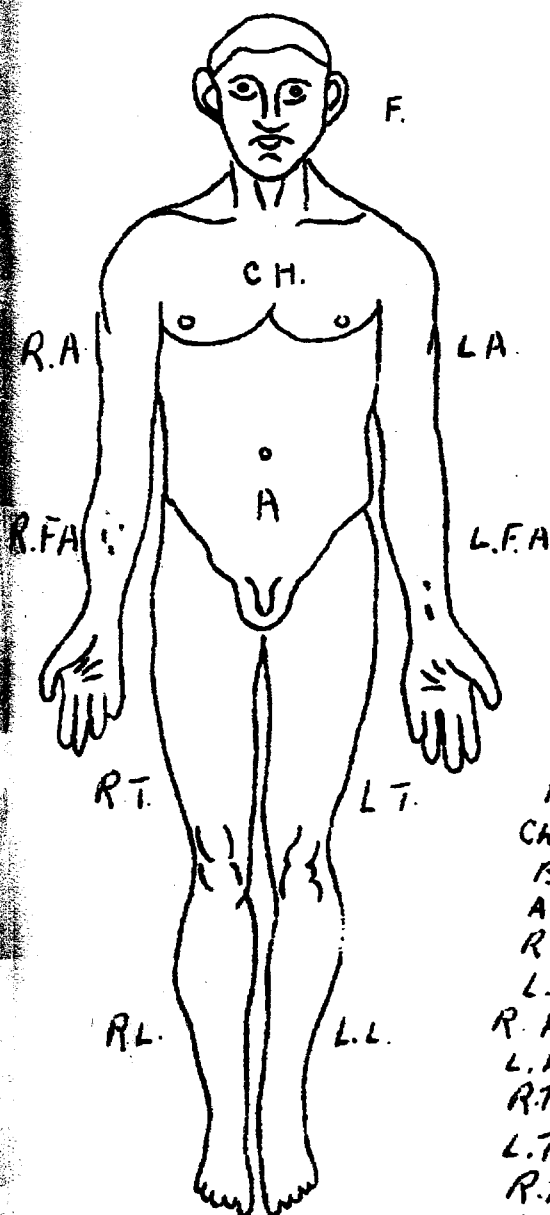
Description of Condition.

R.F.A. A few tiny papules anterior surface.

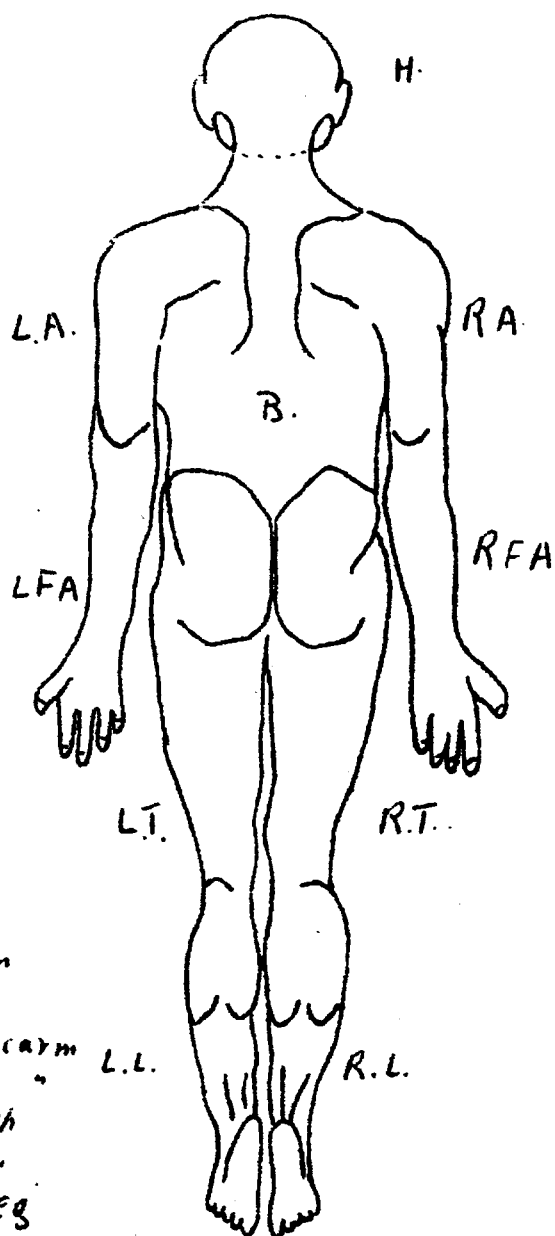
L.F.A. Two small papules anterior surface.

Group. 11.

Front.



Back.



H. Head
F. Face
CH. Chest
B. Back
A. Abdomen
R.A. Right Arm
L.A. Left "
R.F.A. Right Forearm
L.F.A. Left " "
R.T. Right Thigh
L.T. Left " "
R.L. Right Leg
L.L. Left leg.

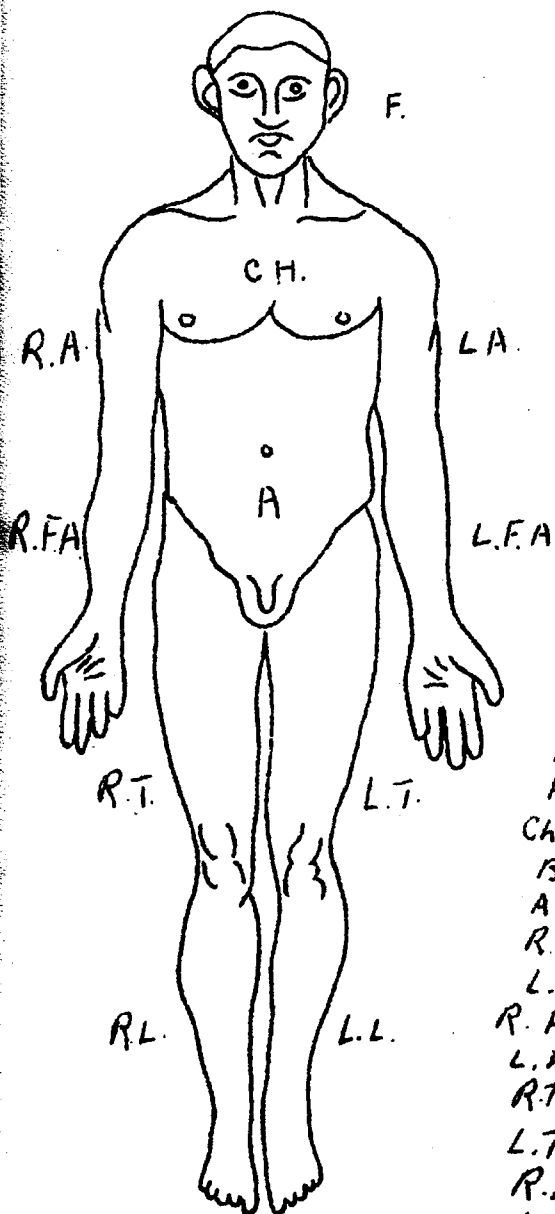
Name. Age. Occupation. Length of Service.
 E. McC. (U). 51 yrs. Paraffin sheds . 20 yrs.

Description of Condition.

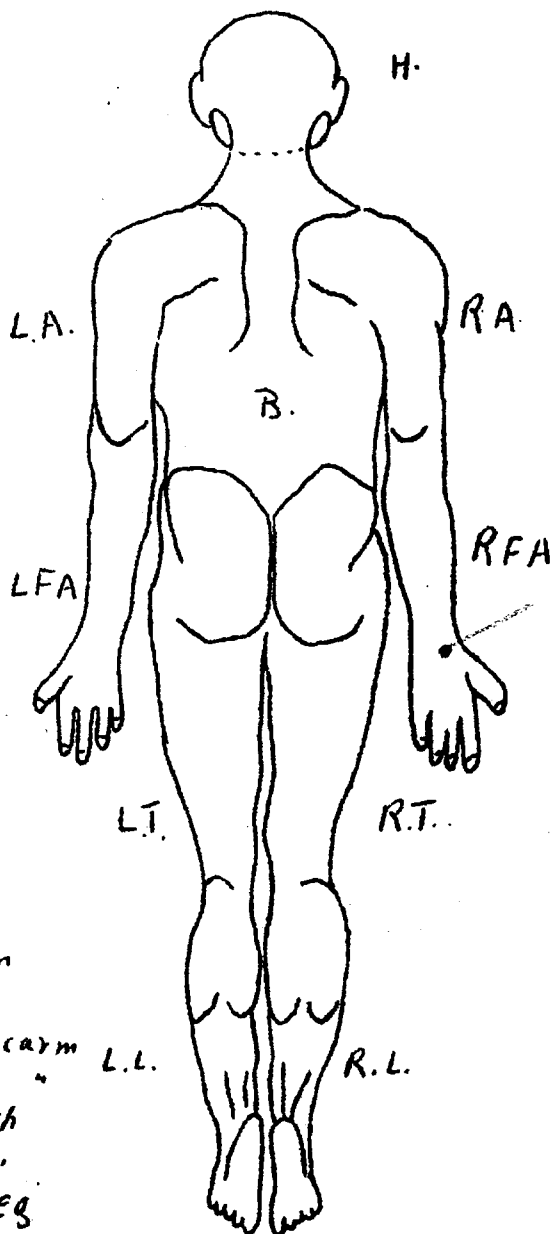
On dorsum of right hand, at base of thumb, one papule, becoming pustular.

Group. II.

Front.



Back.



H. Head
 F. Face
 CH. Chest
 B. Back
 A. Abdomen
 R.A. Right Arm
 L.A. Left "
 R.FA. Right Forearm
 L.FA. Left "
 R.T. Right Thigh
 L.T. Left "
 R.L. Right Leg
 L.L. Left leg.

Name. Age. Occupation. Length of Service.

J.A. (U). 36 yrs . . . Refinery (Sweating sheds) 4 yrs.

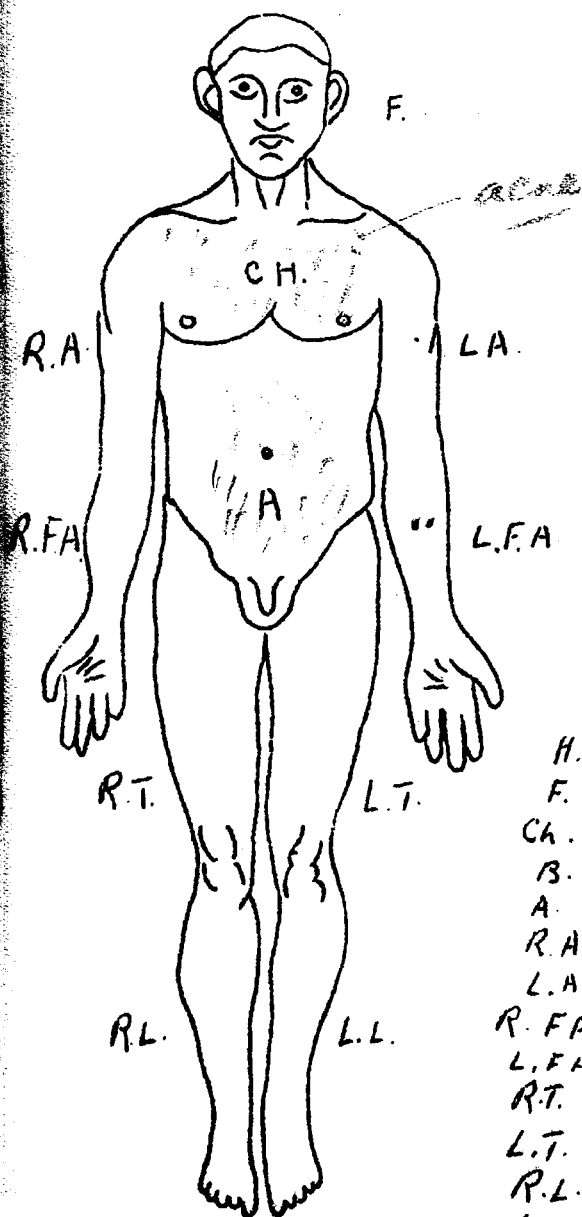
Description of Condition.

L.A.. 2 small pustules in front of elbow.

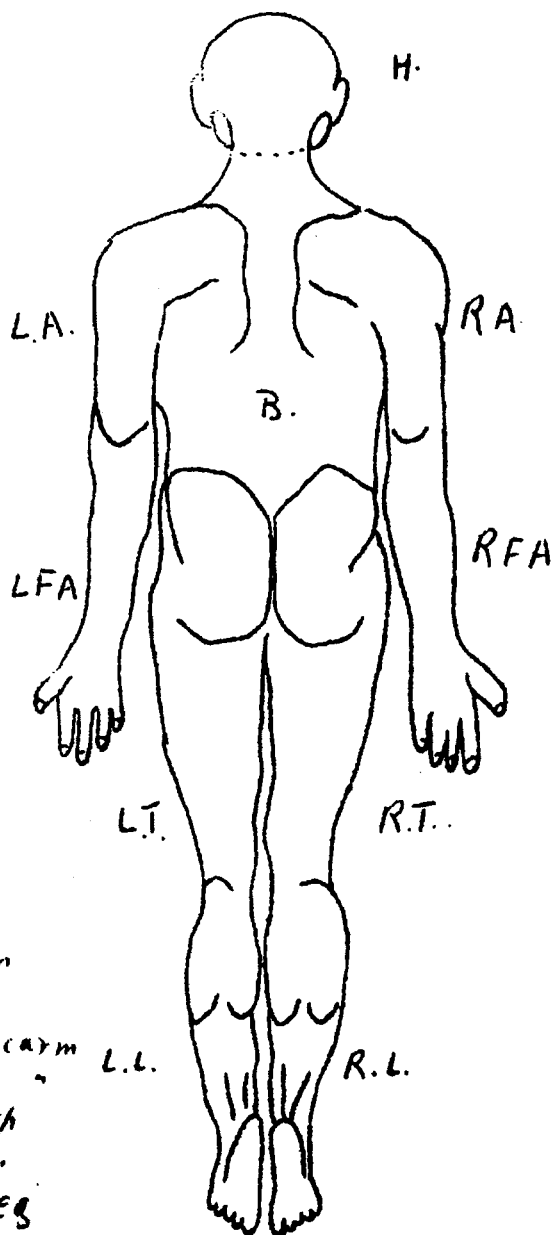
(profuse crop of blackheads over chest and abdomen.)

Group. 2

Front



Back.



H. Head
F. Face.
Ch. Chest.
B. Back.
A. Abdomen
R.A. Right Arm
L.A. Left "
R.FA. Right Forearm
L.FA. Left " "
R.T. Right Thigh
L.T. Left " "
R.L. Right Leg
L.L. Left leg.

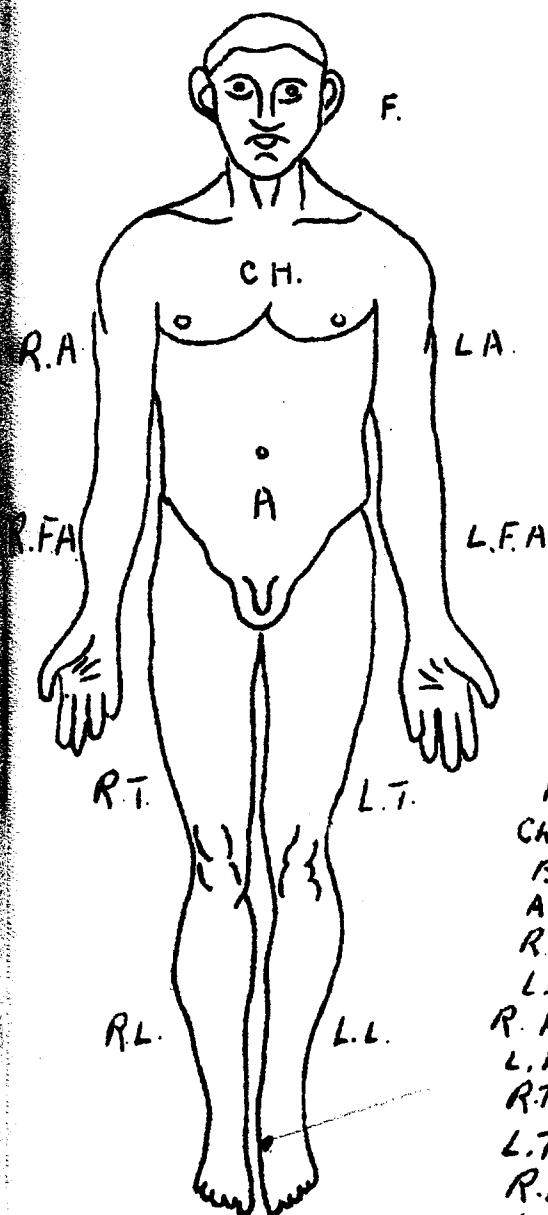
<u>Name.</u>	<u>Age.</u>	<u>Occupation.</u>	<u>Length of Service.</u>
P.L. (A).	?	Paraffin Sheds.	? . Army.

Description of
Condition.

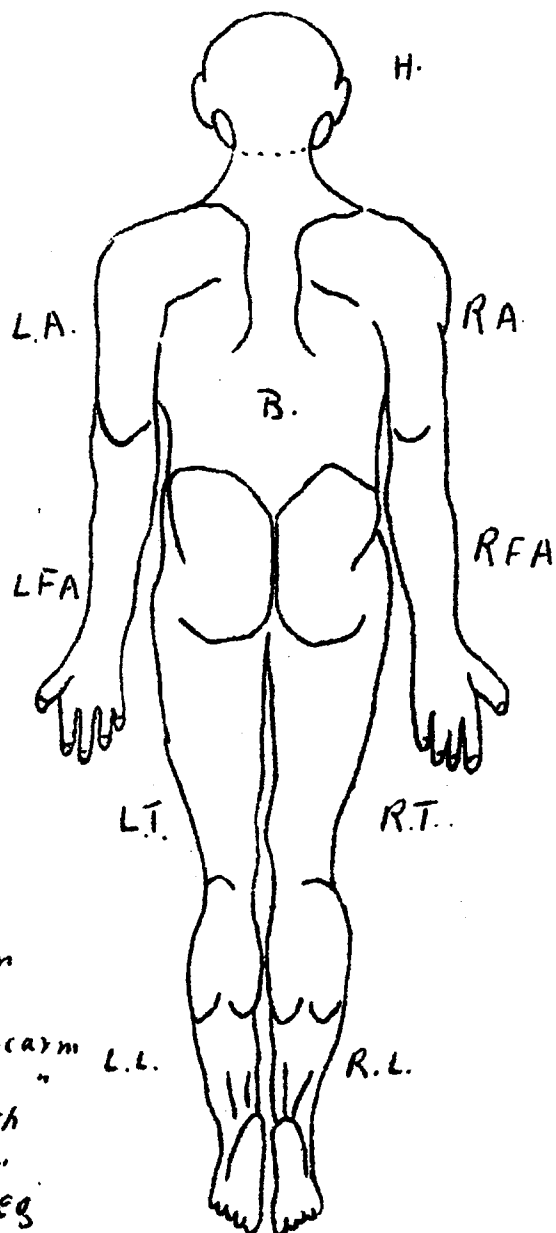
L.L. One papule dorsal surface of foot, inner border, above instep.

Group. 2.

Front.



Back.



H. Head
F. Face.
Ch. Chest.
B. Back.
A. Abdomen
R.A. Right Arm
L.A. Left "
R.FA. Right Forearm
L.FA. Left " "
R.T. Right Thigh
L.T. Left " "
R.L. Right Leg
L.L. Left leg.

Name. Age. Occupation. Length of Service.

A.S. (A). 34 yrs. Paraffin Sheds. 15 years.

Description of Condition.

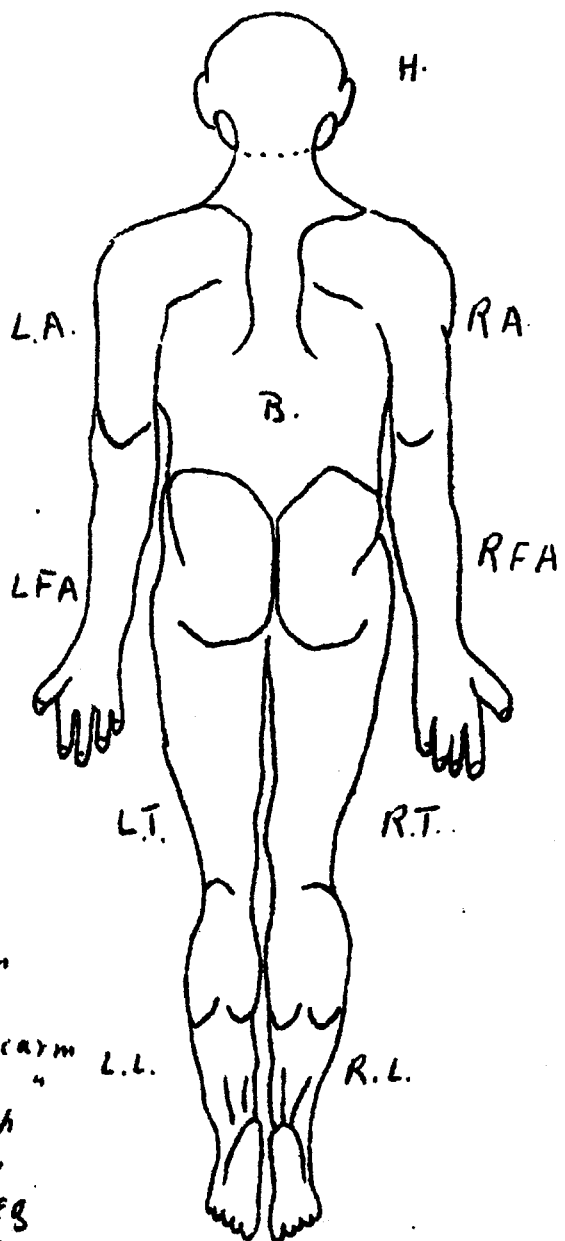
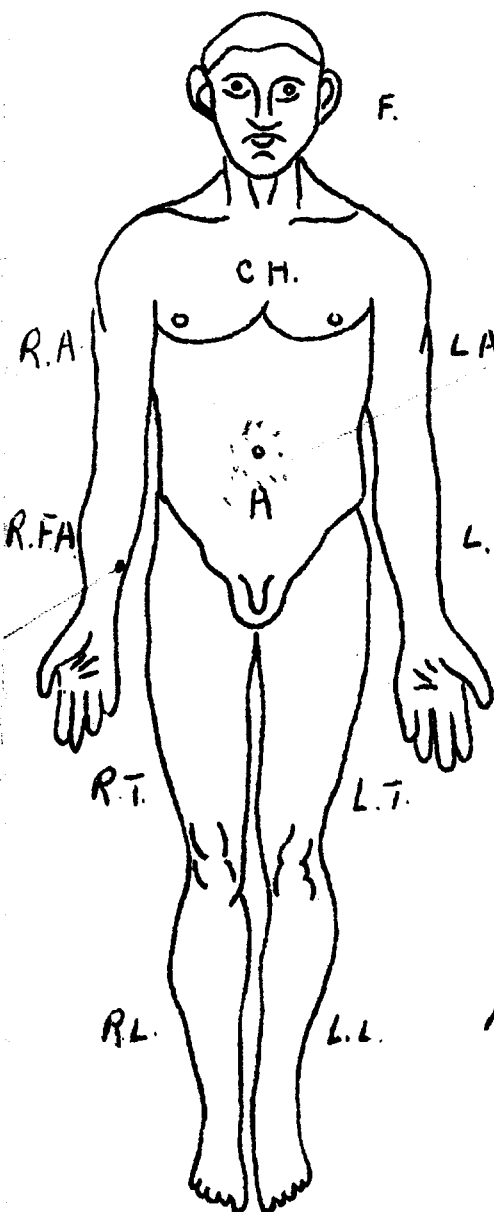
R.F.A. One papule ulnar border.

Slight acne over abdomen.

Group. 2.

Front.

Back.



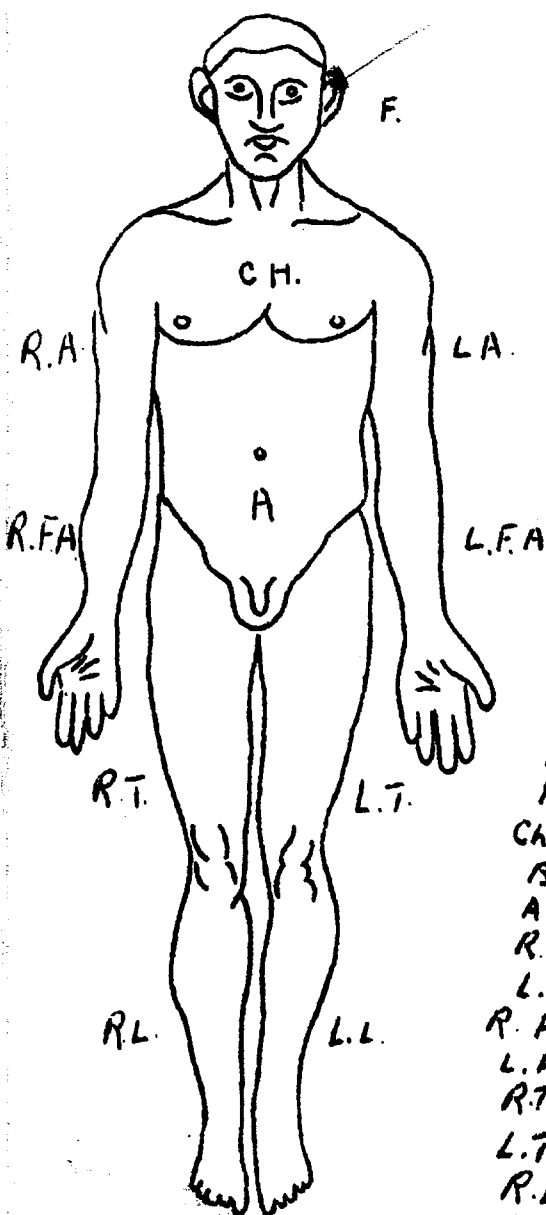
- H. Head
- F. Face.
- Ch. Chest
- B. Back
- A. Abdomen
- R.A. Right Arm
- L.A. Left "
- R.F.A. Right Forearm
- L.F.A. Left " "
- R.T. Right Thigh
- L.T. Left " "
- R.L. Right Leg
- L.L. Left leg.

<u>Name.</u>	<u>Age.</u>	<u>Occupation.</u>	<u>Length of Service.</u>
J.J. (A).	78 years.	Paraffin Sheds.	40 years.

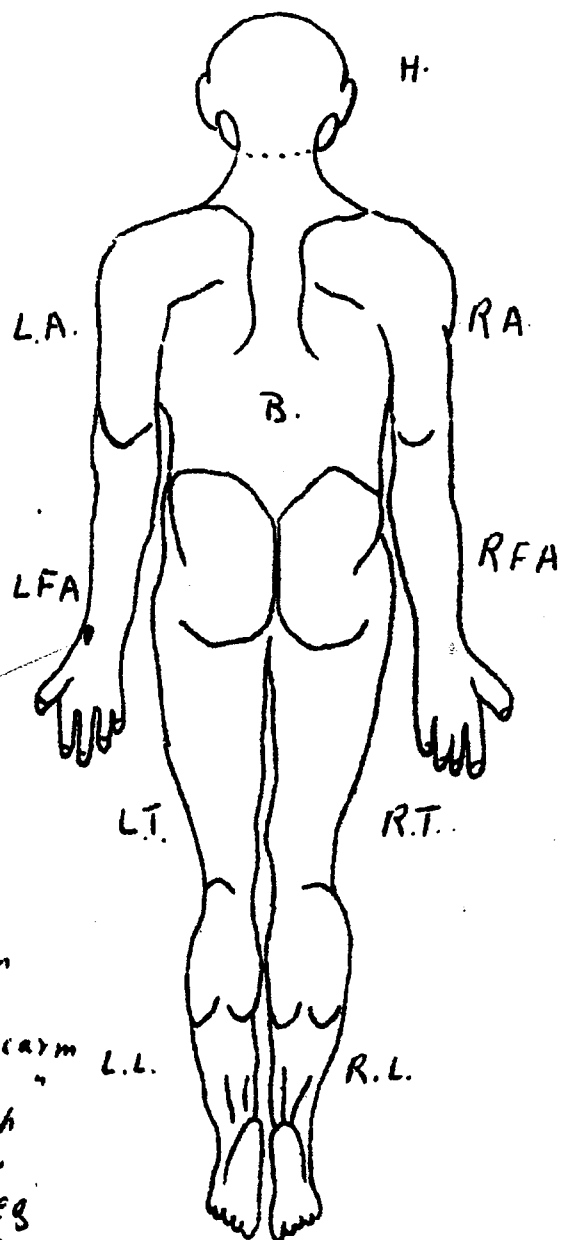
Description of Condition. One papule base of left thumb.
scar over left ear, the result of removal of epithelioma.

Group. 2.

Front.



Back.



H. Head
F. Face.
CH. Chest
B. Back
A. Abdomen
R.A. Right Arm
L.A. Left "
R.F.A. Right Forearm
L.F.A. Left "
R.T. Right Thigh
L.T. Left "
R.L. Right Leg
L.L. Left leg.

<u>Name.</u>	<u>Age.</u>	<u>Occupation.</u>	<u>Length of Service.</u>
M.F. (A).	38 years.	Paraffin Sheds.	12 years.

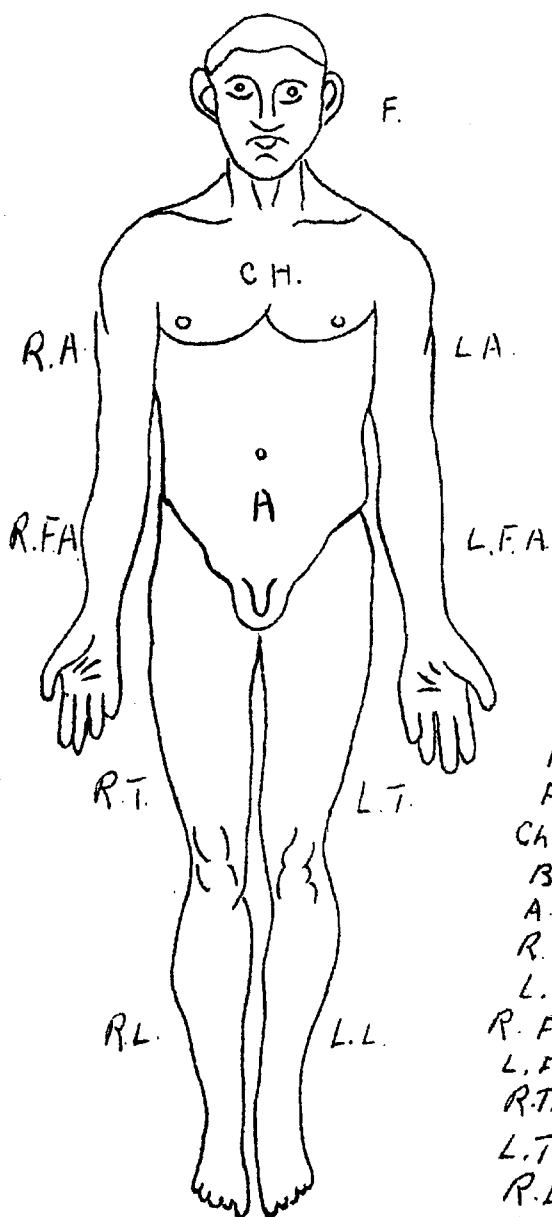
Description of Condition.

L.F.A. Three papules behind left wrist.

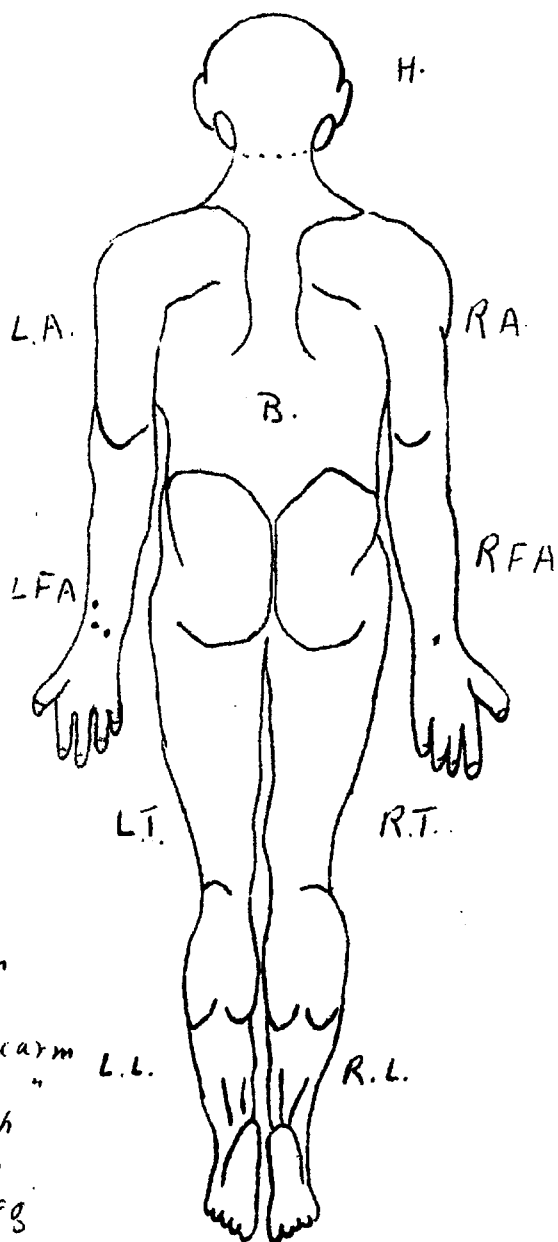
R.F.A. One papule behind right wrist.

Group. 2.

Front.



Back.



H. Head
 F. Face.
 CH. Chest.
 B. Back.
 A. Abdomen
 R.A. Right Arm
 L.A. Left "
 R.F.A. Right Forearm
 L.F.A. Left " "
 R.T. Right Thigh
 L.T. Left " "
 R.L. Right Leg
 L.L. Left leg.

<u>Name.</u>	<u>Age.</u>	<u>Occupation.</u>	<u>Length of Service.</u>
M.F. (A).	38 years.	Paraffin Sheds.	12 years.

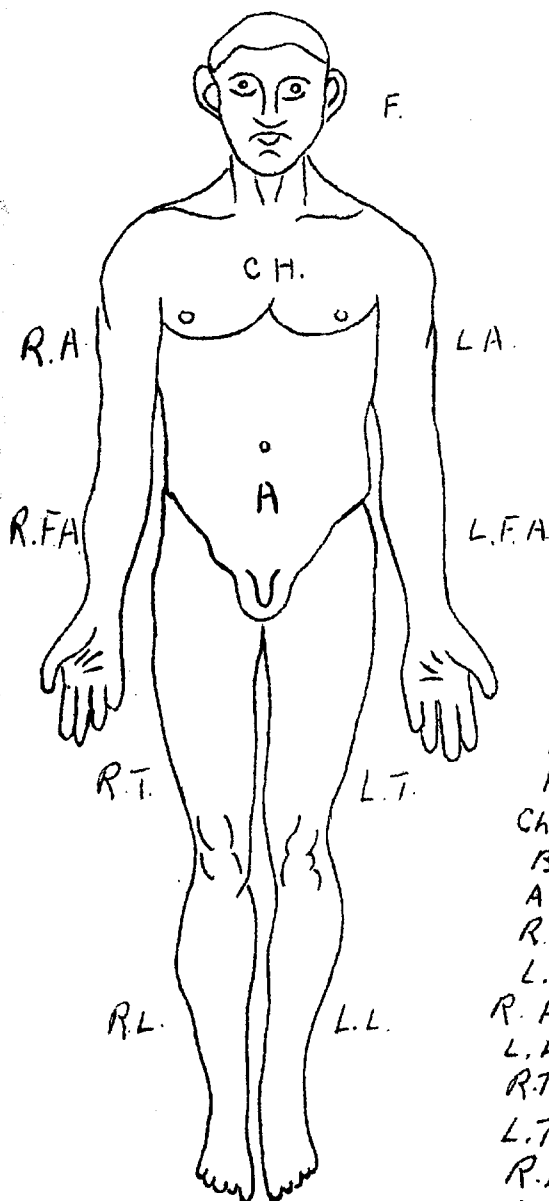
Description of Condition.

L.F.A. Three papules behind left wrist.

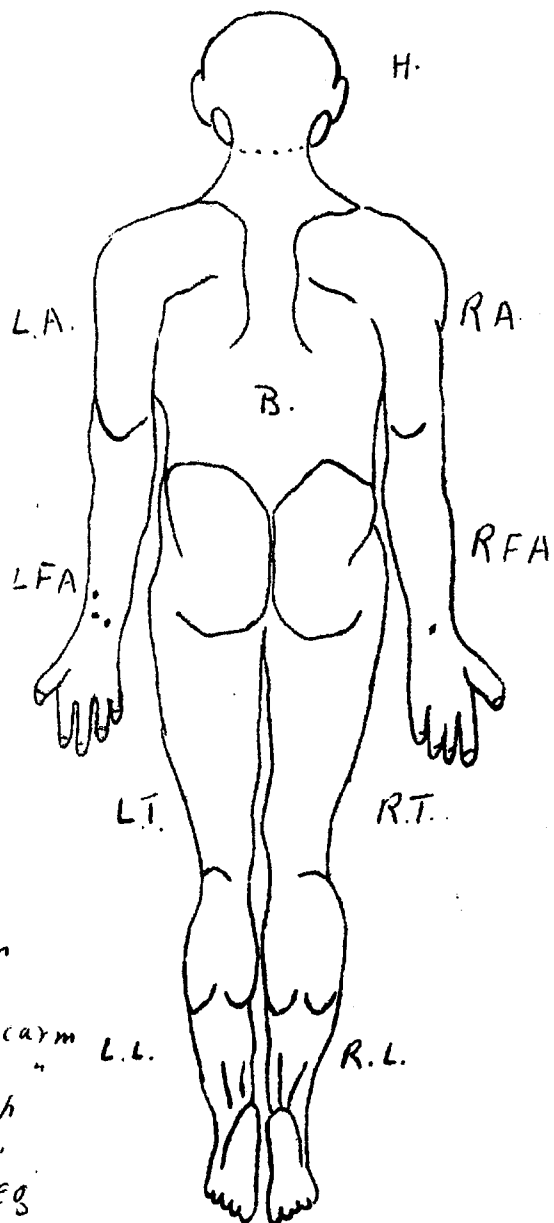
R.F.A. One papule behind right wrist.

Group. 2.

Front.



Back.



- H. Head
- F. Face
- CH. Chest
- B. Back
- A. Abdomen
- R.A. Right Arm
- L.A. Left "
- R.F.A. Right Forearm
- L.F.A. Left " " L.L.
- R.T. Right Thigh
- L.T. Left " "
- R.L. Right Leg
- L.L. Left leg.

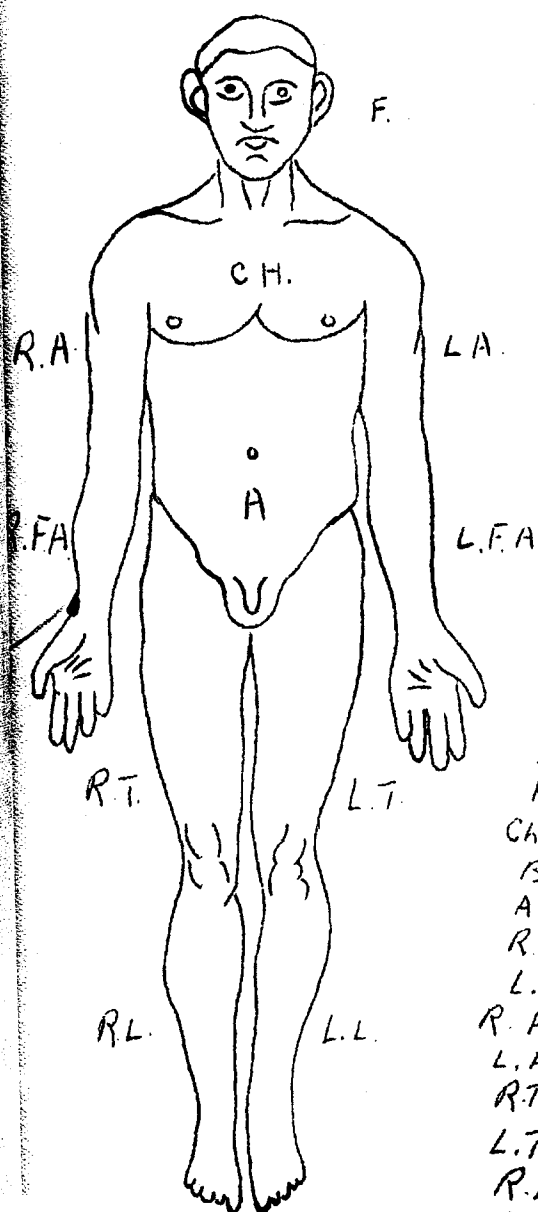
Name. Age. Occupation. Length of Service.
 W.C. (A). 47 years Paraffin Sheds. 7 years.

Description of Condition.

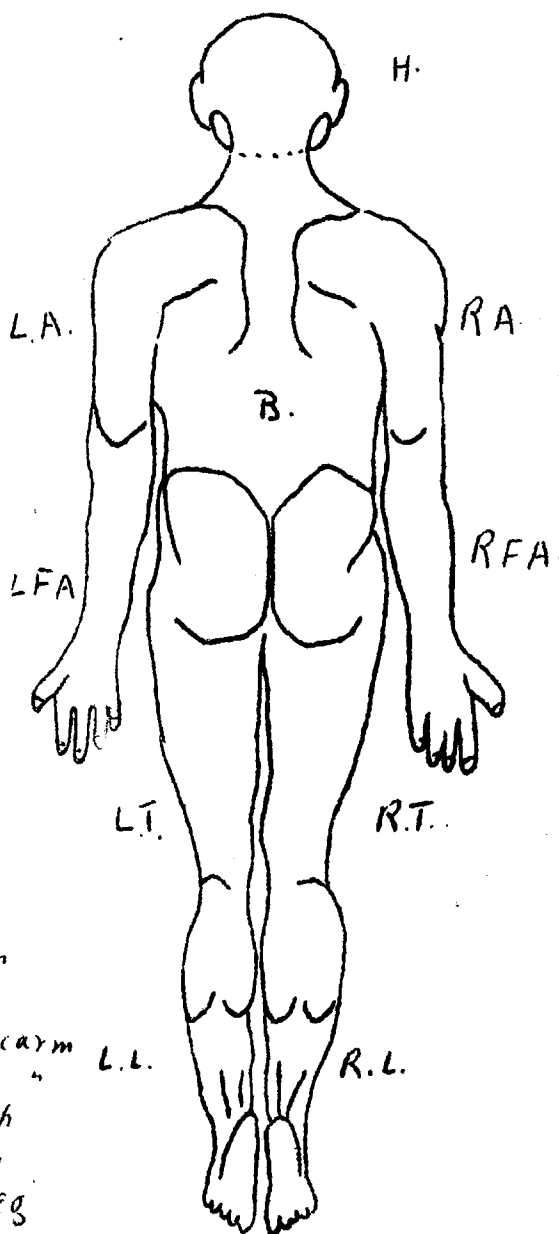
One papule outer border right wrist.

Group. 2.

Front.



Back.



- H. Head
- F. Face
- Ch. Chest
- B. Back
- A. Abdomen
- RA Right arm
- LA Left "
- RFA Right Forearm
- LFA Left " "
- RT. Right Thigh
- LT. Left " "
- RL. Right Leg
- LL. Left leg.

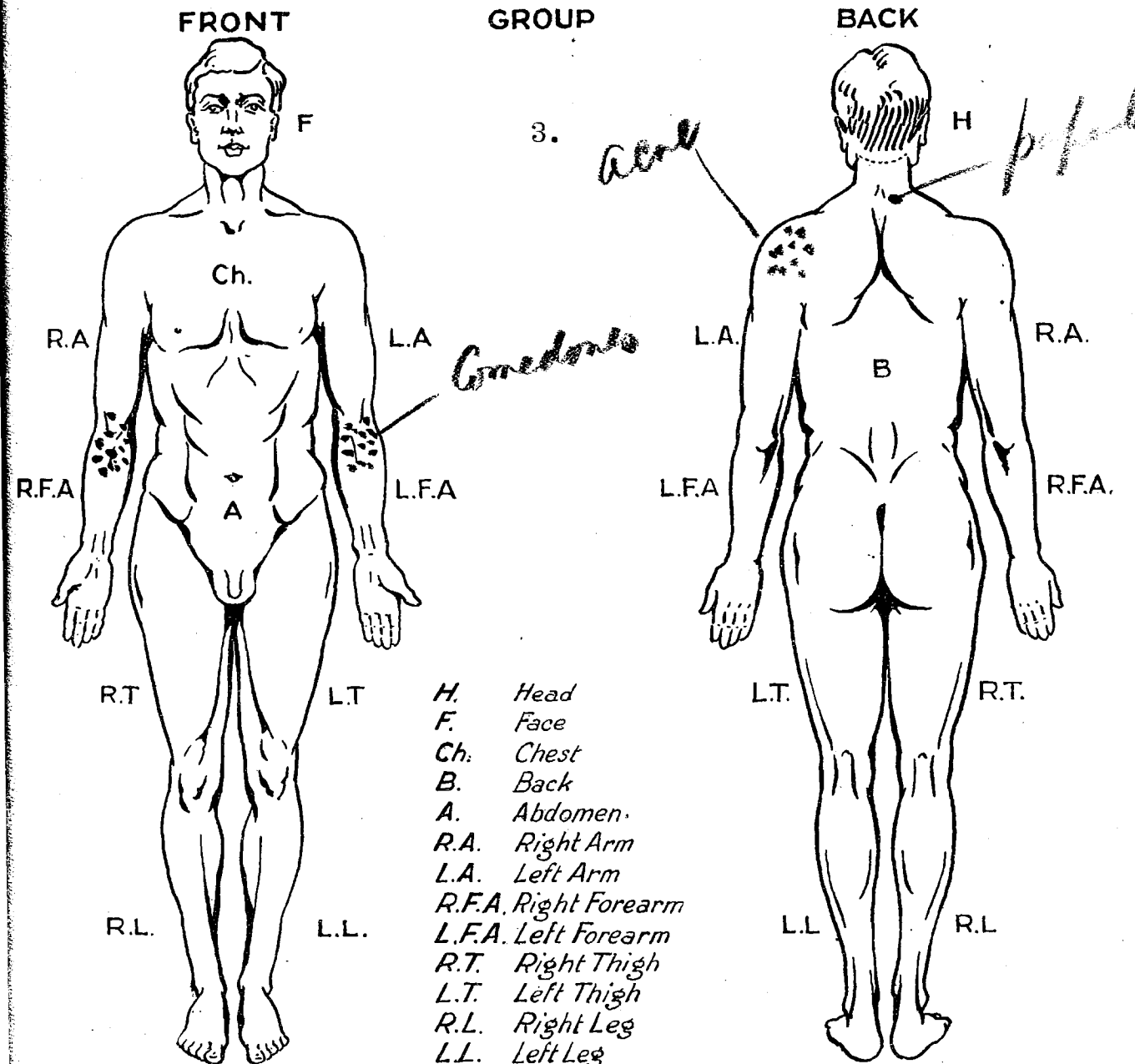
GROUP 3:-

Those having a Slight Degree of any form of
Eruption. and limited in extent.

ical Examination of Workers in Paraffin Department.

Name.	Age.	Occupation.	Length of Service
McK. (O).	38 yrs.	green sheds	3½ yrs.

Description of Condition



October 1921.

Medical Examination of Workers in Paraffin Department.

Name.

Age.

Occupation.

Length of Service

T.P. (0).

31 yrs.

pressman.

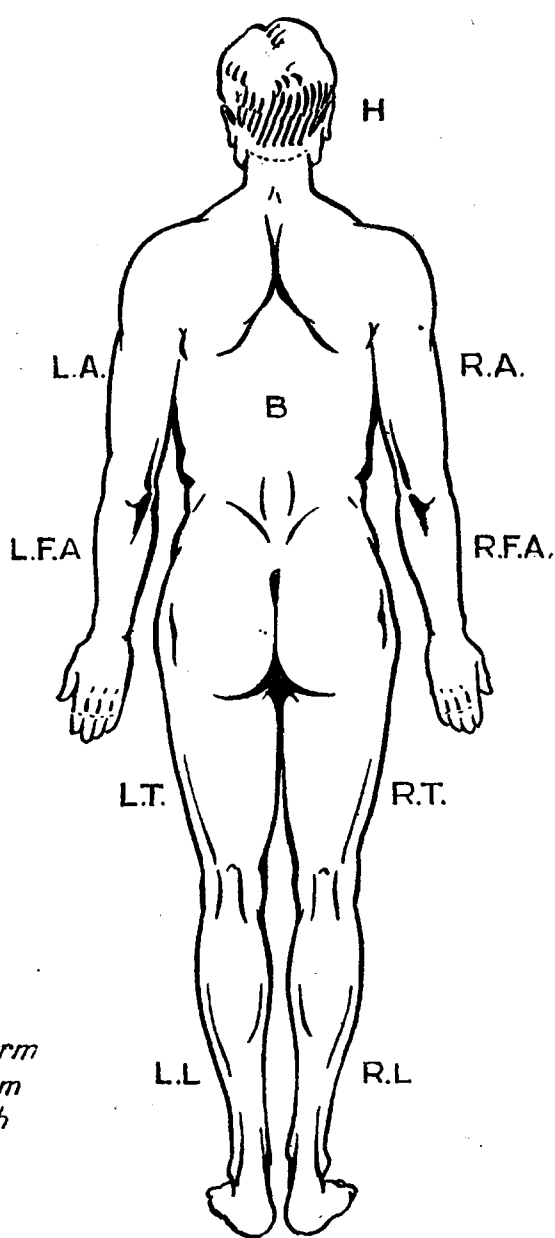
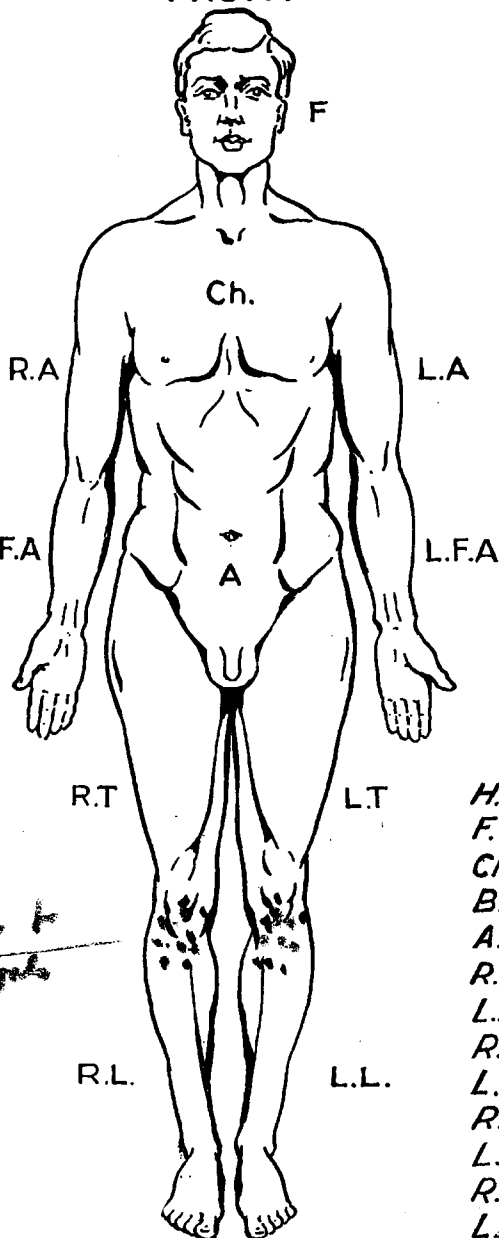
1½ years.

Description of Condition

FRONT

GROUP

BACK



- H. Head
F. Face
Ch. Chest
B. Back
A. Abdomen.
R.A. Right Arm
L.A. Left Arm
R.F.A. Right Forearm
L.F.A. Left Forearm
R.T. Right Thigh
L.T. Left Thigh
R.L. Right Leg
L.L. Left Leg

Medical Examination of Workers in Paraffin Department.

Name.

Age.

Occupation.

Length of Service

J.E. (O).

14 yrs

pressman.

1½ yrs.

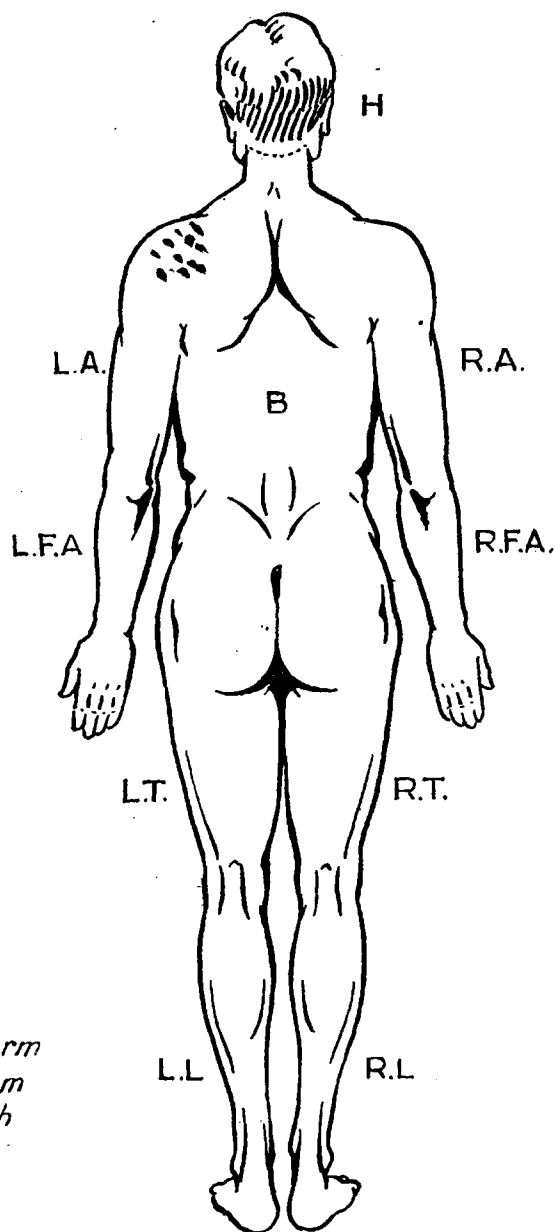
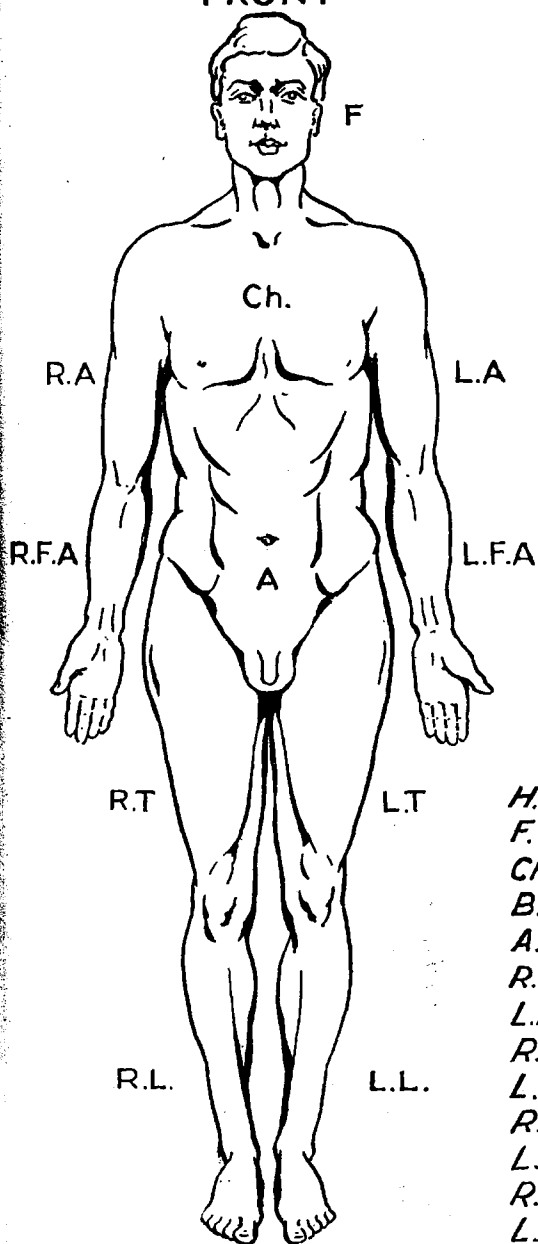
Description of Condition

occupational comedones behind right shoulder.

FRONT

GROUP

BACK



H. Head
F. Face
Ch. Chest
B. Back
A. Abdomen.
R.A. Right Arm
L.A. Left Arm
R.F.A. Right Forearm
L.F.A. Left Forearm
R.T. Right Thigh
L.T. Left Thigh
R.L. Right Leg
L.L. Left Leg

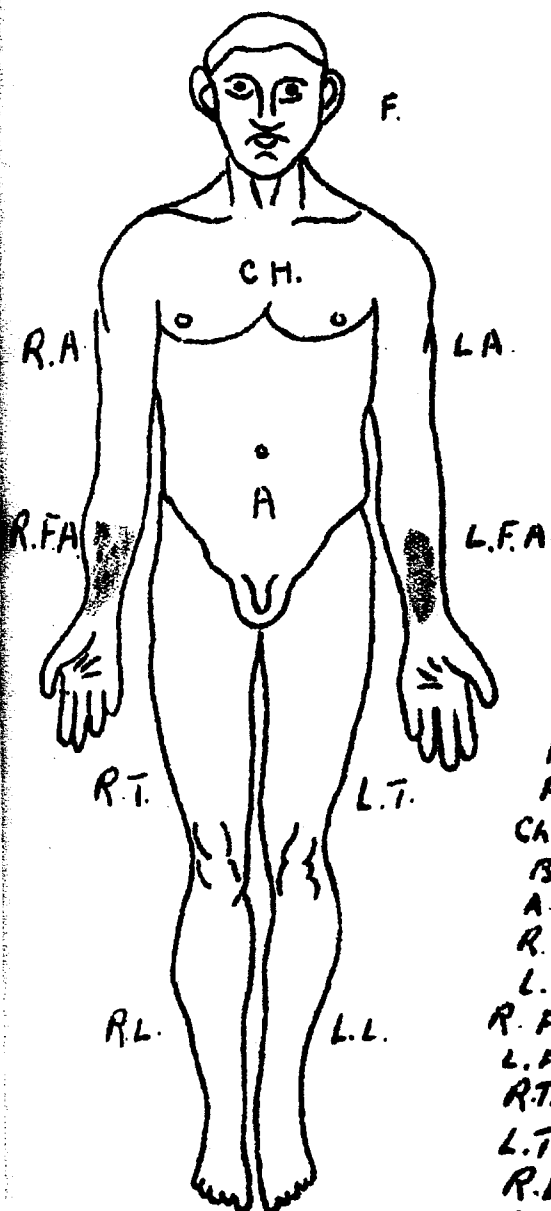
<u>Name.</u>	<u>Age.</u>	<u>Occupation.</u>	<u>Length of Service.</u>
D.(B).	44 yrs.	Paraffin sheds .	30 yrs.

Description of Condition. R.A. Slight erythematous dermatitis forearm .
L.F.A. slight erythematous dermatitis front, also ditto over back of wrist.

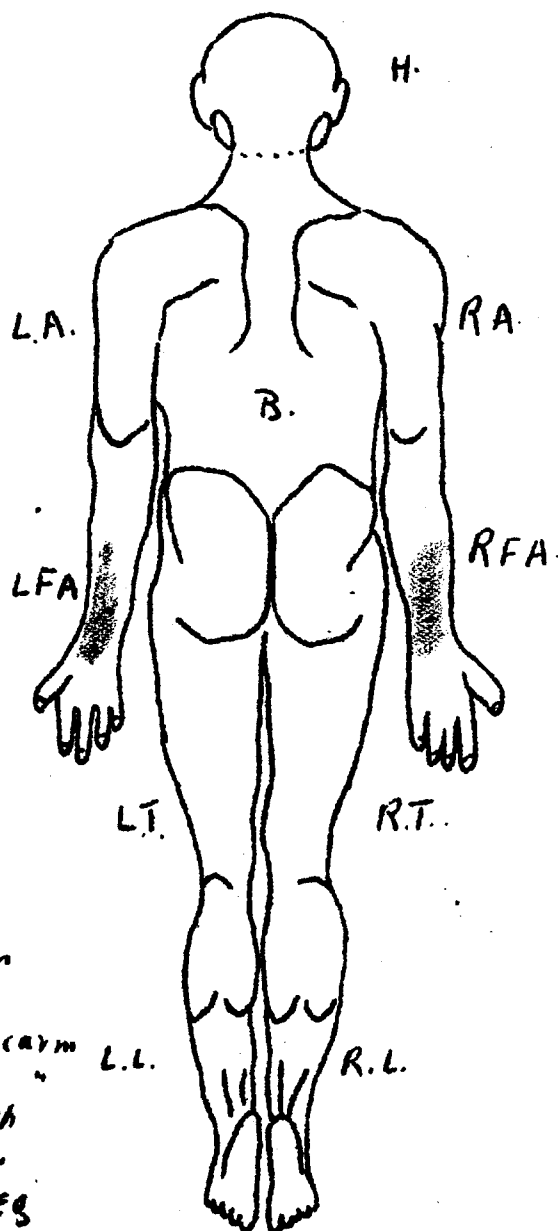
Slight scaliness over back of left wrist.
Several small papules both forearms, back and front.

Group. III.

Front.



Back.



H. Head
F. Face
CH. Chest
B. Back
A. Abdomen
R.A. Right Arm
L.A. Left "
R.F.A. Right Forearm
L.F.A. Left " "
R.T. Right Thigh
L.T. Left " "
R.L. Right Leg
L.L. Left Leg

Name. Age. Occupation. Length of Service.

M. (B).

59 yrs .

Paraffin sheds.

30 yrs.

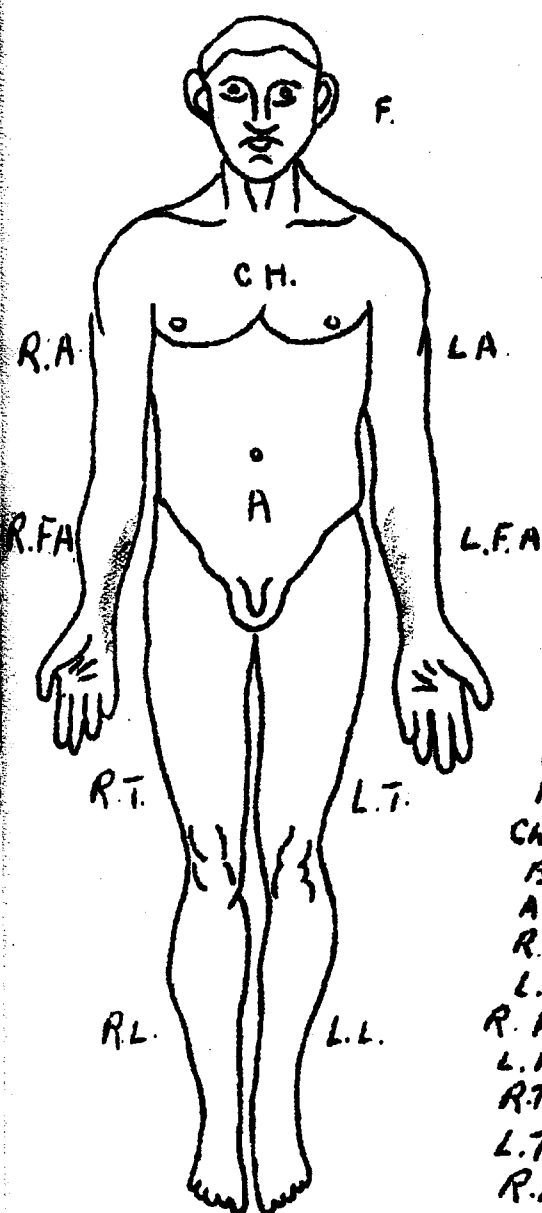
Description of Condition.

R.F.A. Dryness and scaliness of skin. A few scaly warts.

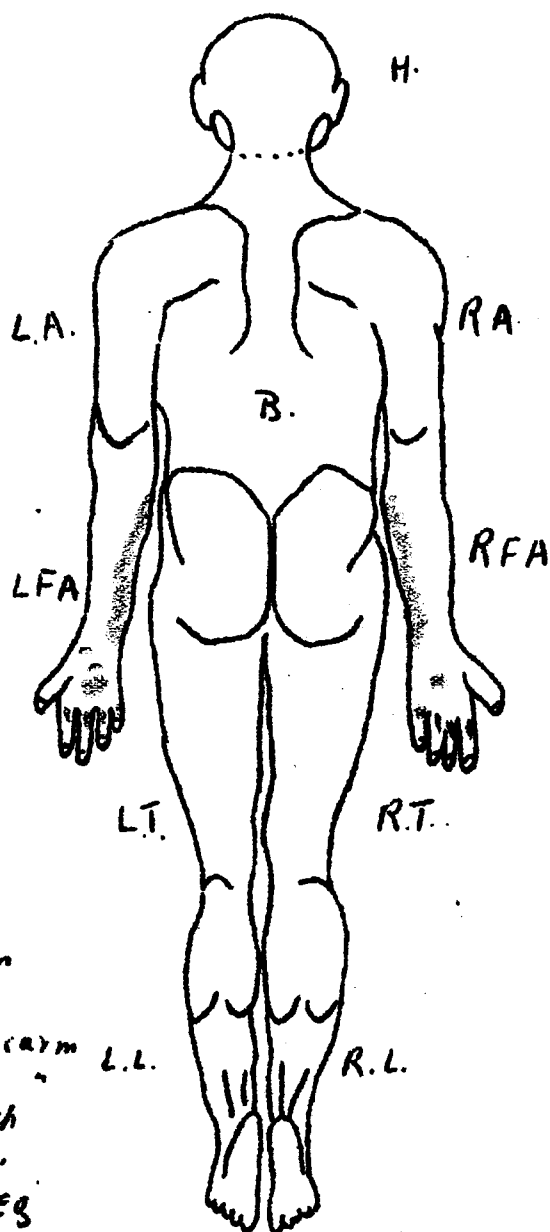
L.F.A. A few scaly nodules on ulnar border. Skin dry. 2 small warts back of left hand.

Group. III.

Front.



Back.



- H. Head
- F. Face.
- CH. Chest.
- B. Back.
- A. Abdomen
- R.A. Right Arm
- L.A. Left "
- R.F.A. Right Forearm
- L.F.A. Left "
- R.T. Right Thigh
- L.T. Left "
- R.L. Right Leg
- L.L. Left leg.

<u>Name.</u>	<u>Age.</u>	<u>Occupation.</u>	<u>Length of Service.</u>
M. (B).	56 yrs.	Paraffin sheds	21½ yrs.

Description of Condition.

H. Acne scars on neck .

R.F.A. slight erythema on dorsal surface.

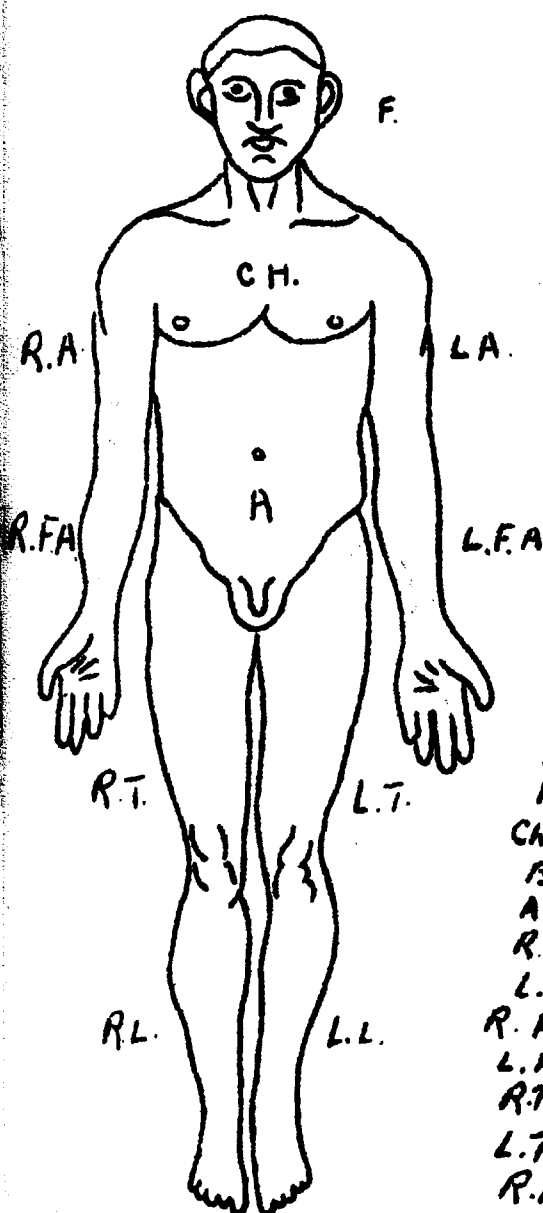
3 papules back of right hand.

1 papule base of middle finger behind.

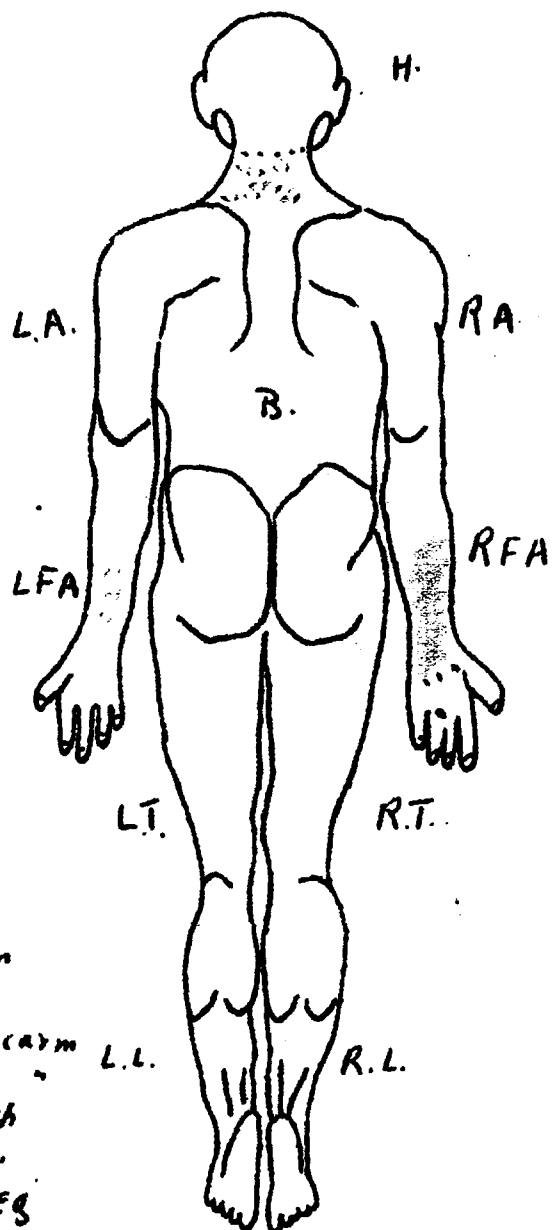
L.A. L.F.A. Scars of a few pustules only.

Group. III.

Front.



Back.



H. Head
 F. Face.
 Ch. Chest.
 B. Back.
 A. Abdomen
 R.A. Right Arm
 L.A. Left "
 R.F.A. Right Forearm
 L.F.A. Left "
 R.T. Right Thigh
 L.T. Left "
 R.L. Right Leg
 L.L. Left leg.

<u>Name.</u>	<u>Age.</u>	<u>Occupation.</u>	<u>Length of Service.</u>
G. (B).	48 yrs.	Paraffin sheds.	19 yrs.

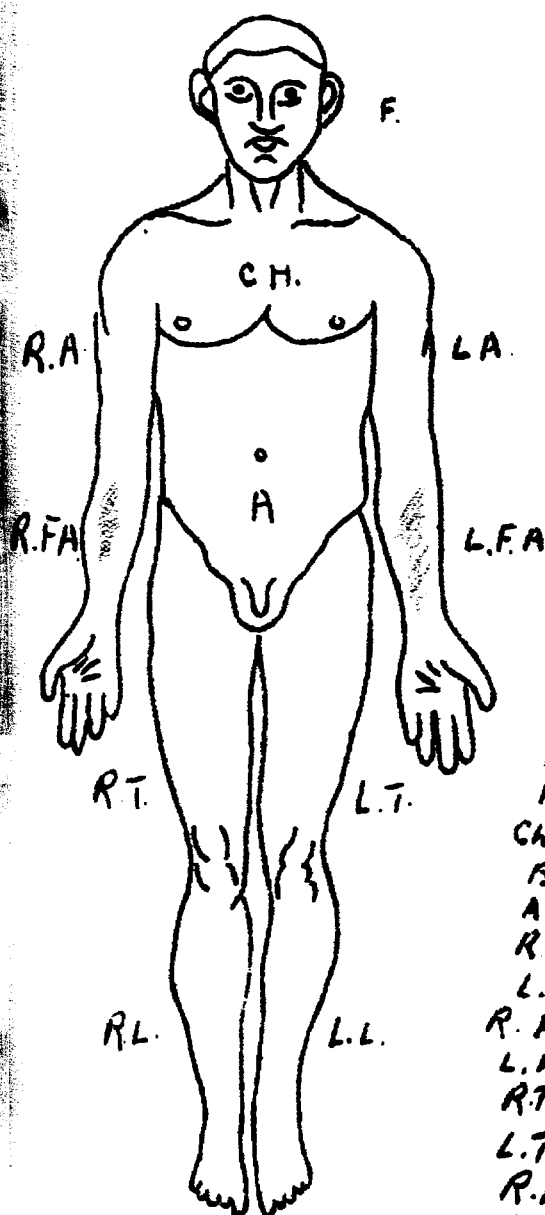
Description of Condition.

R.F.A. Slight redness below elbow.
over dorsum of hand skin rough.

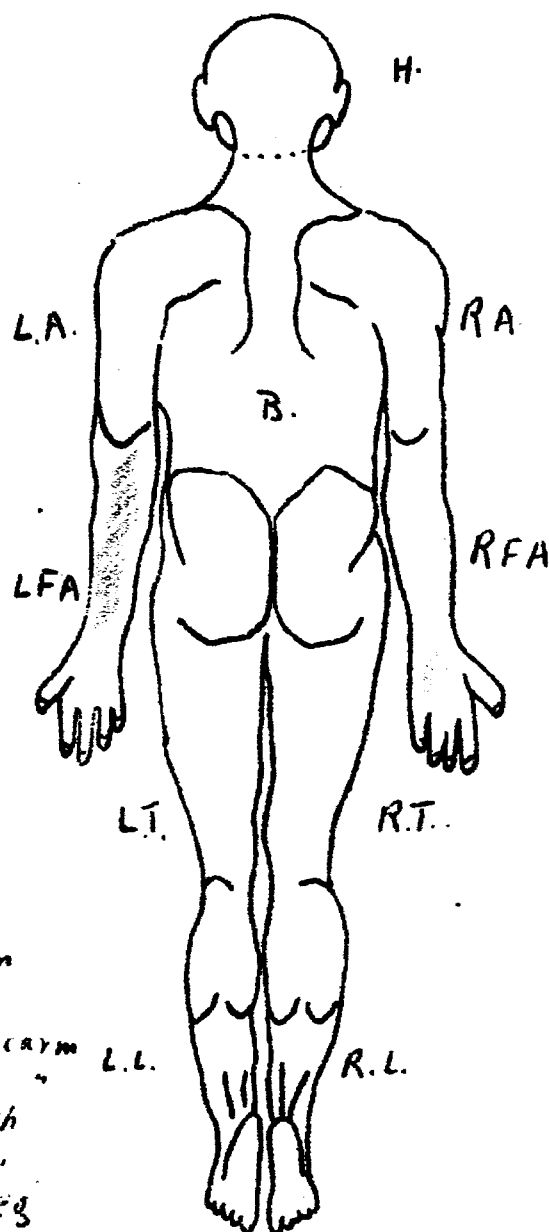
L.F.A. redness front and back (slight erythema).

Group. III.

Front.



Back.



H. Head
F. Face
Ch. Chest
B. Back
A. Abdomen
RA Right Arm
LA Left "
R.FA Right Forearm
L.FA Left "
RT. Right Thigh
LT. Left "
RL. Right Leg
LL. Left leg.

Name. Age. Occupation. Length of Service.

F. (B). 16½ years. Paraffin sheds. 16½ yrs.

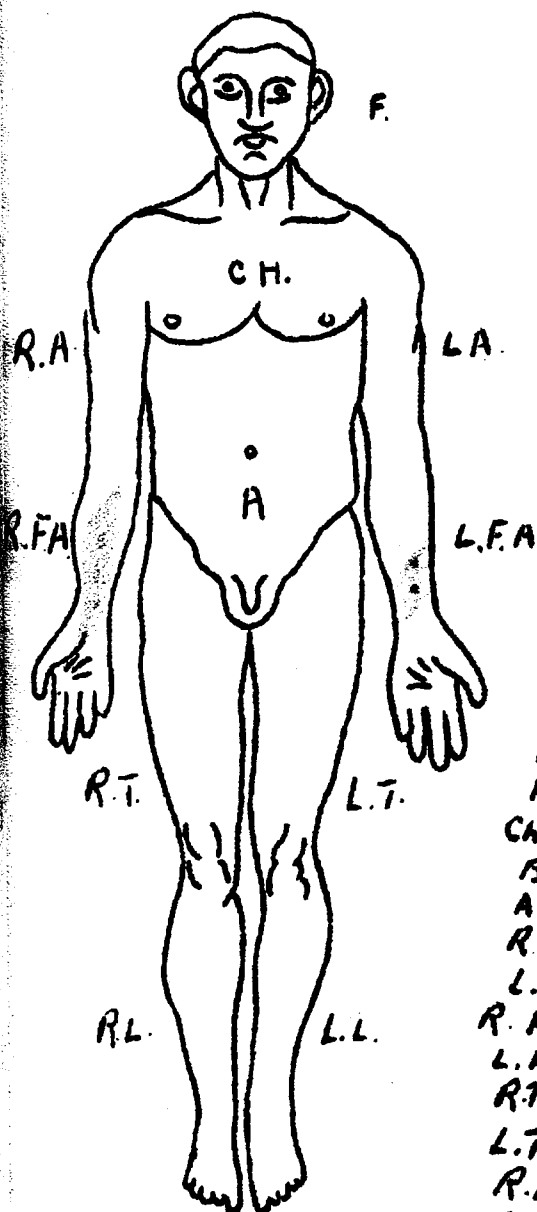
Description of Condition.

R.F.A. scars of healed pustules
Slight erythematous dermatitis front and behind.

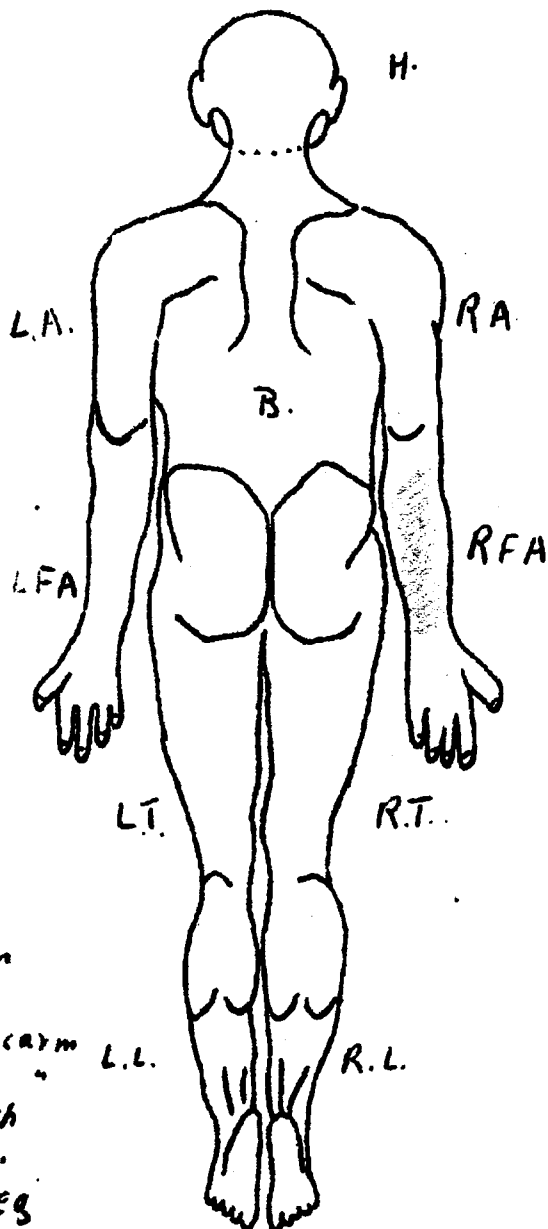
L.F.A. 2 small papules anterior aspect.

Group. III.

Front.



Back.



- H. Head
- F. Face.
- CH. Chest.
- B. Back.
- A. Abdomen
- RA. Right Arm
- LA. Left "
- R.F.A. Right Forearm
- L.F.A. Left " "
- RT. Right Thigh
- LT. Left " "
- RL. Right Leg
- LL. Left leg.

<u>Name.</u>	<u>Age.</u>	<u>Occupation.</u>	<u>Length of Service.</u>
D.S. (B).	33 yrs.	Paraffin sheds.	13 yrs.

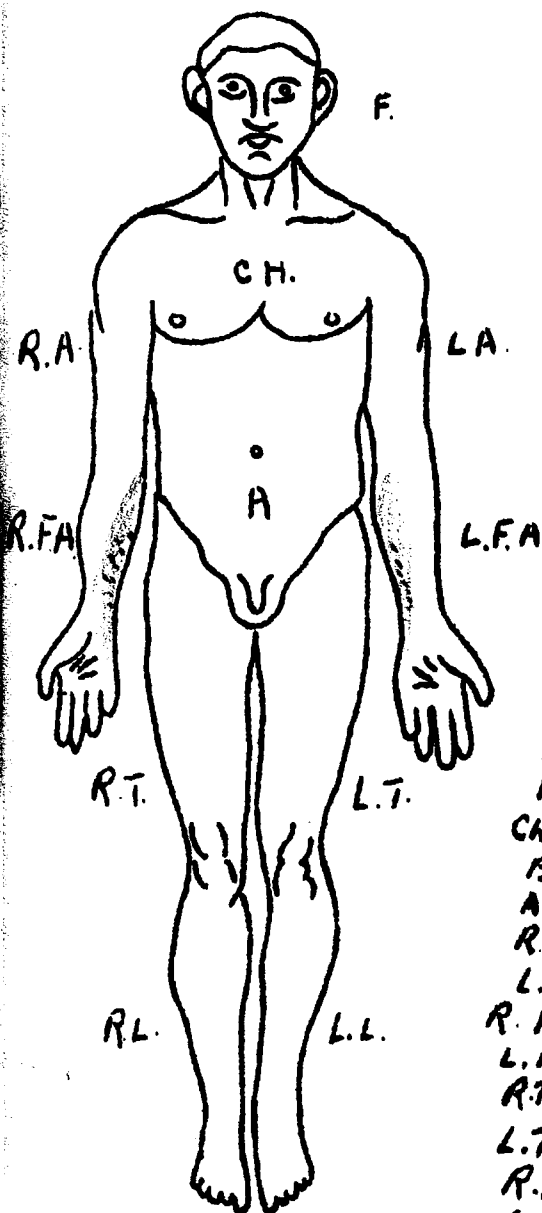
Description of Condition.

R.F.A. A few papules and pustules on ulnar border .
Slight erythematous dermatitis.

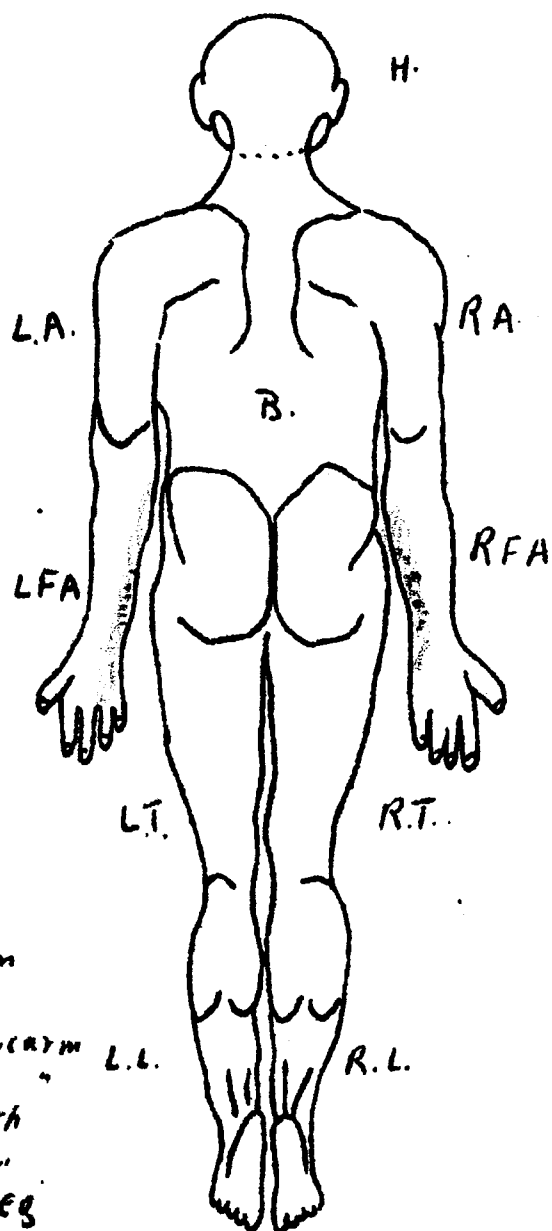
L.F.A. Some pustules, papules and erythematous
dermatitis ulnar border.
A few small scaly warts.

Group. III.

Front.



Back.



H. Head
F. Face.
Ch. Chest
B. Back
A. Abdomen
R.A. Right Arm
L.A. Left "
R.F.A. Right Forearm
L.F.A. Left " "
R.T. Right Thigh
L.T. Left " "
R.L. Right Leg
L.L. Left leg.

Name.	Age.	Occupation.	Length of Service.
S (B).	35 yrs.	Paraffin sheds	10½ yrs.

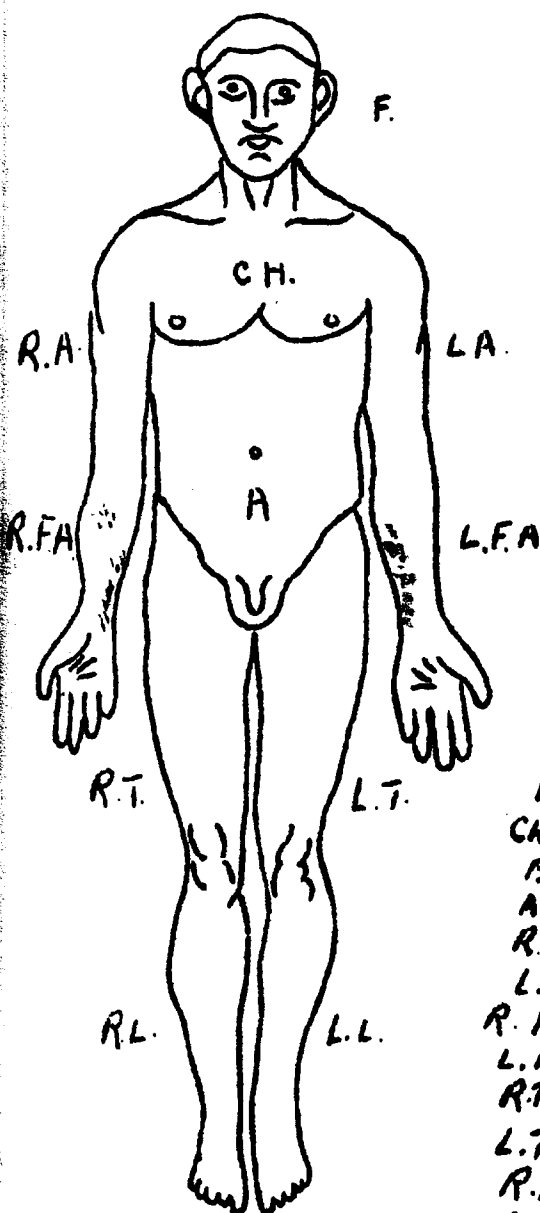
Description of Condition.

R.F.A. A few papules below elbow, anterior aspect.
Numerous papules ulnar border

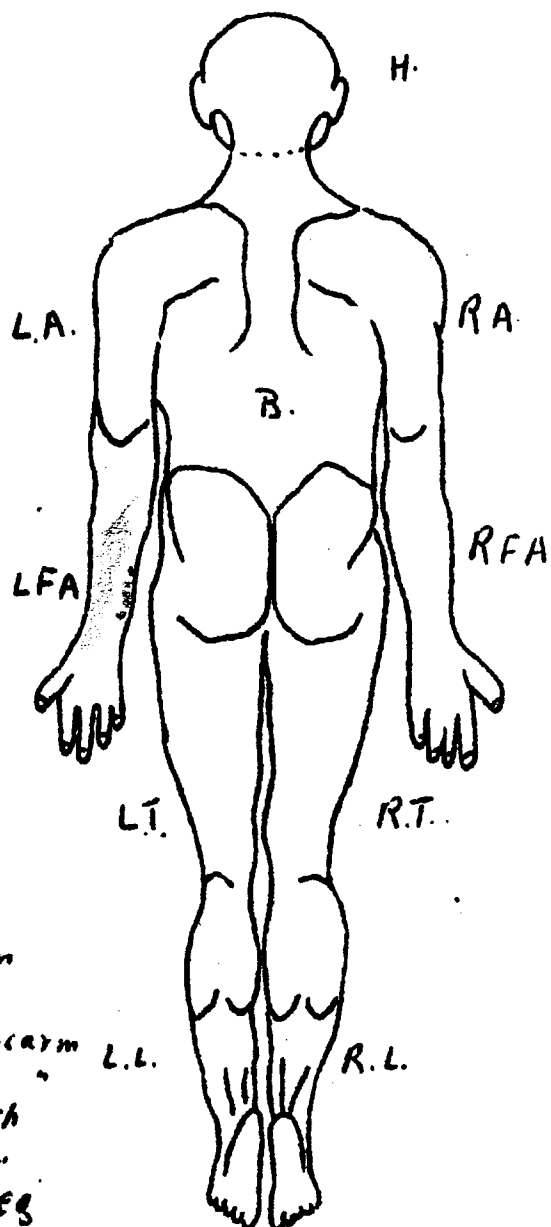
L.F.A. Slight redness (erythema) behind. Numerous
pustules and papules ulnar border.

Group. III.

Front.



Back.



H. Head
F. Face
CH. Chest
B. Back
A. Abdomen
R.A. Right Arm
L.A. Left "
R.F.A. Right Forearm
L.F.A. Left "
R.T. Right Thigh
L.T. Left "
R.L. Right Leg
L.L. Left leg.

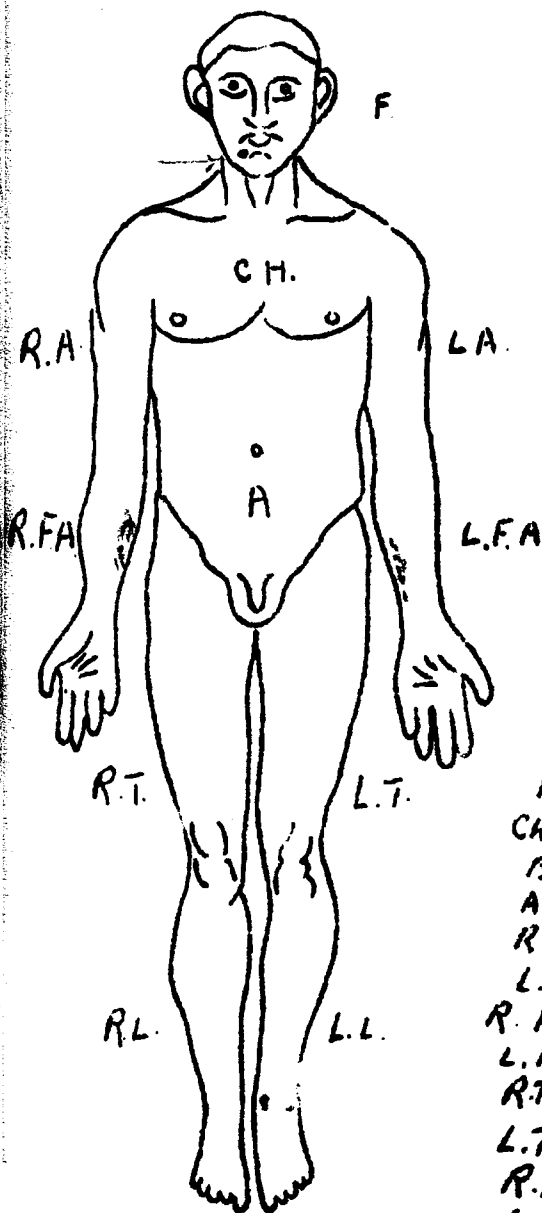
Name.	Age.	Occupation.	Length of Service.
S. (B).	26 yrs.	Paraffin sheds	5½ yrs.

Description of Condition.

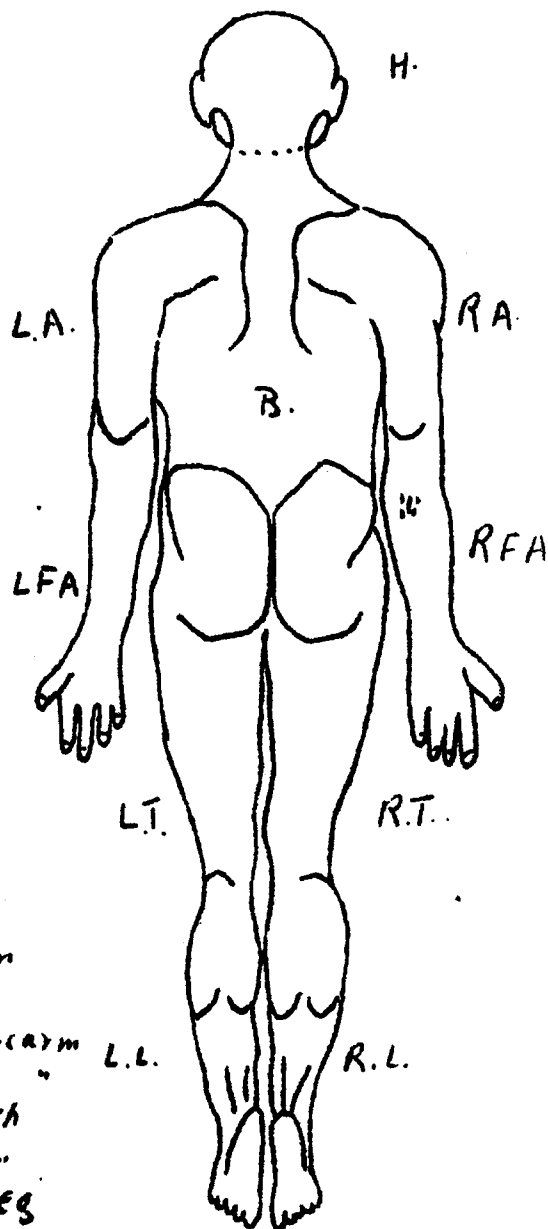
F. Slight papule below right angle of mouth.
 R.A. A few papules behind elbow.
 L.F.A. A few papules and pustules ulnar border.
 L.L. slight pustule to inside and above left ankle.

Group. III.

Front.



Back.



H. Head
 F. Face
 CH. Chest
 B. Back
 A. Abdomen
 RA Right Arm
 LA Left "
 R.F.A. Right Forearm
 L.F.A. Left "
 RT. Right Thigh
 LT. Left "
 R.L. Right Leg
 L.L. Left leg.

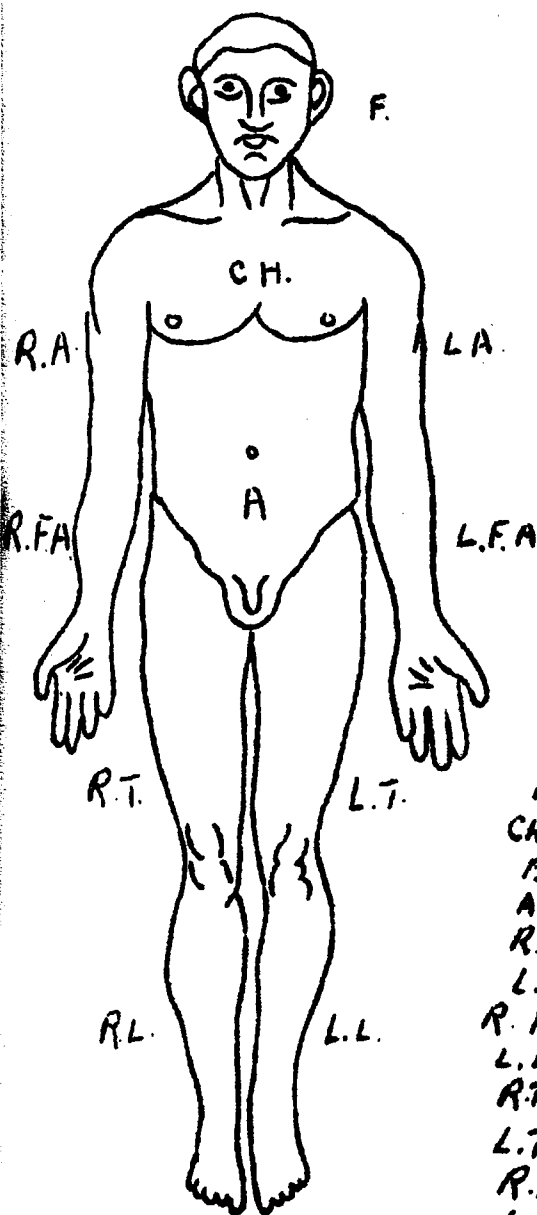
<u>Name.</u>	<u>Age.</u>	<u>Occupation.</u>	<u>Length of Service.</u>
C.L.(b) (B).	49 yrs.	Paraffin sheds.	4 years.

Description of Condition.

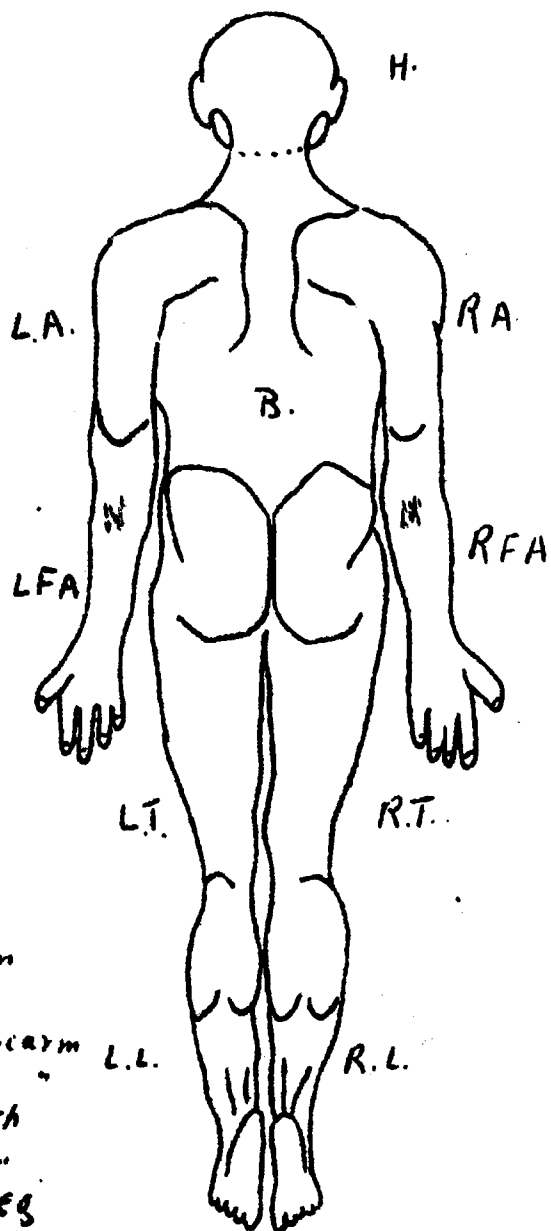
R.A. Three small papules behind elbow.
L.A. 5 small papules behind elbow.

Group. III.

Front.



Back.



H. Head
F. Face.
CH. Chest
B. Back.
A. Abdomen
R.A. Right Arm
L.A. Left "
R.FA. Right Forearm
L.FA. Left " "
R.T. Right Thigh
L.T. Left " "
R.L. Right Leg
L.L. Left leg.

<u>Name.</u>	<u>Age.</u>	<u>Occupation.</u>	<u>Length of Service.</u>
J.N. (B).	49 yrs	Paraffin sheds.	3½ yrs.

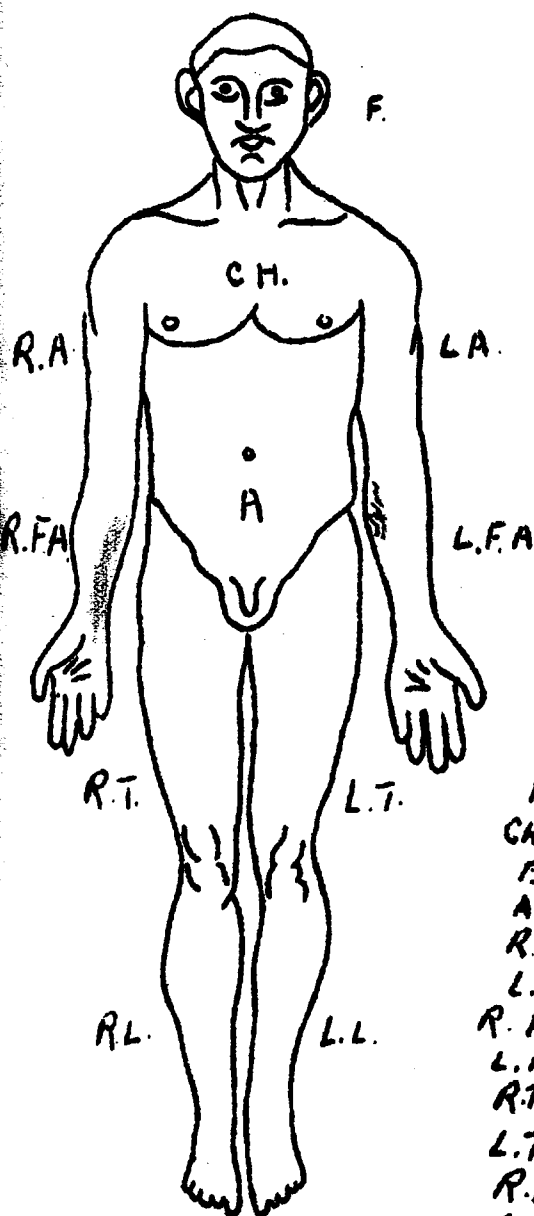
Description of Condition.

R.F.A. slight erythematous dermatitis inner aspect.

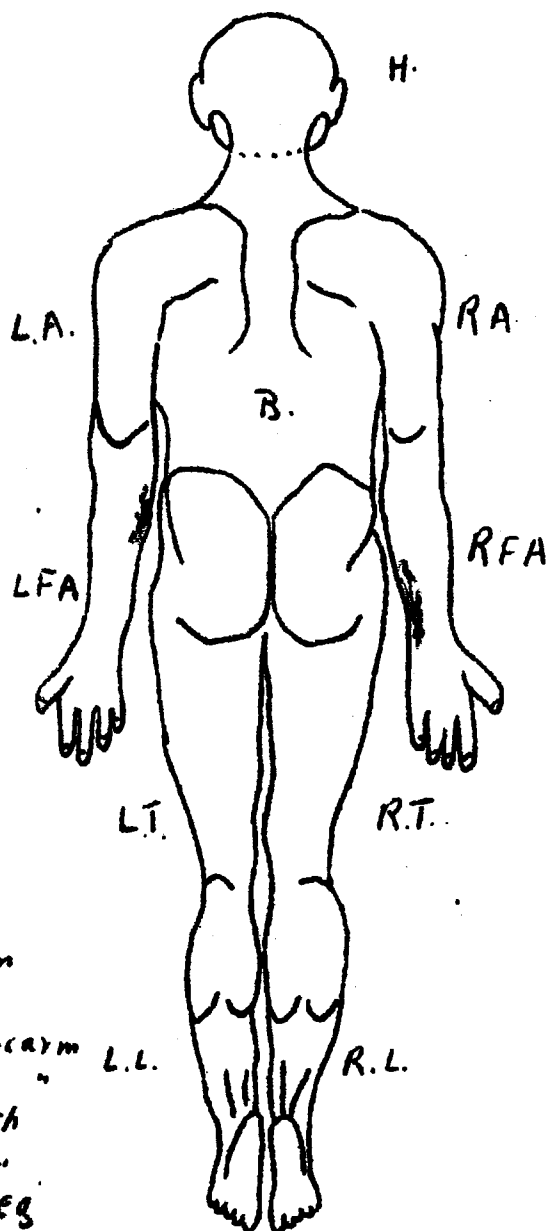
L.A. Two papules inner aspect of elbow.

Group. III.

Front.



Back.



- H. Head
- F. Face
- CH. Chest
- B. Back
- A. Abdomen
- R.A. Right Arm
- L.A. Left "
- R.F.A. Right Forearm
- L.F.A. Left " "
- R.T. Right Thigh
- L.T. Left " "
- R.L. Right Leg
- L.L. Left leg.

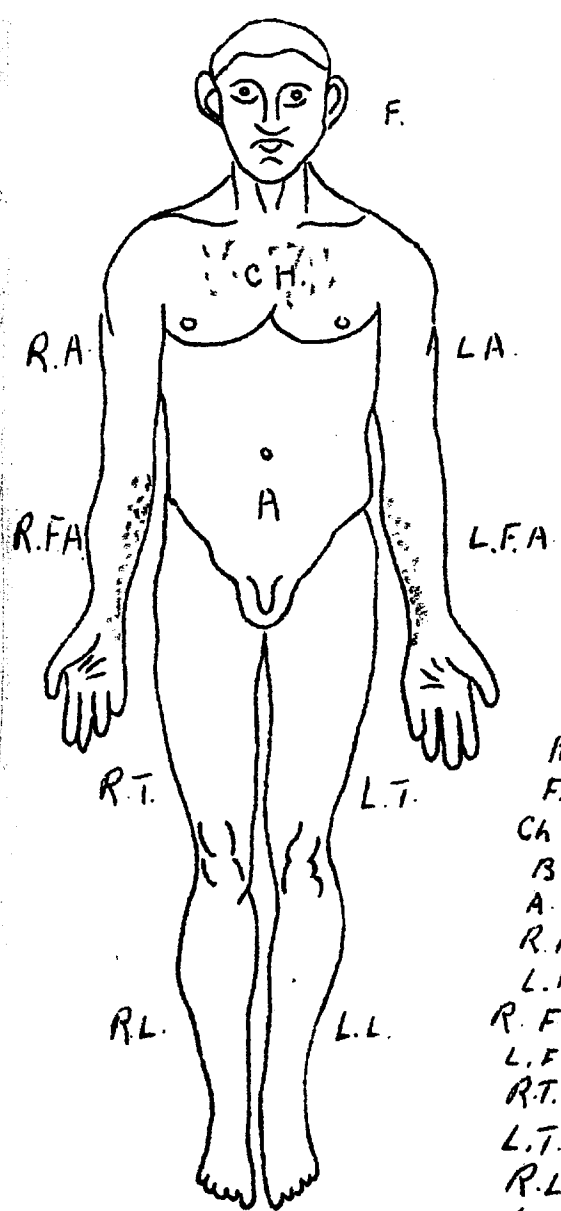
<u>Name.</u>	<u>Age.</u>	<u>Occupation.</u>	<u>Length of Service.</u>
H.B. (B).	29 yrs.	Paraffin sheds.	3 yrs.

Description of Condition.

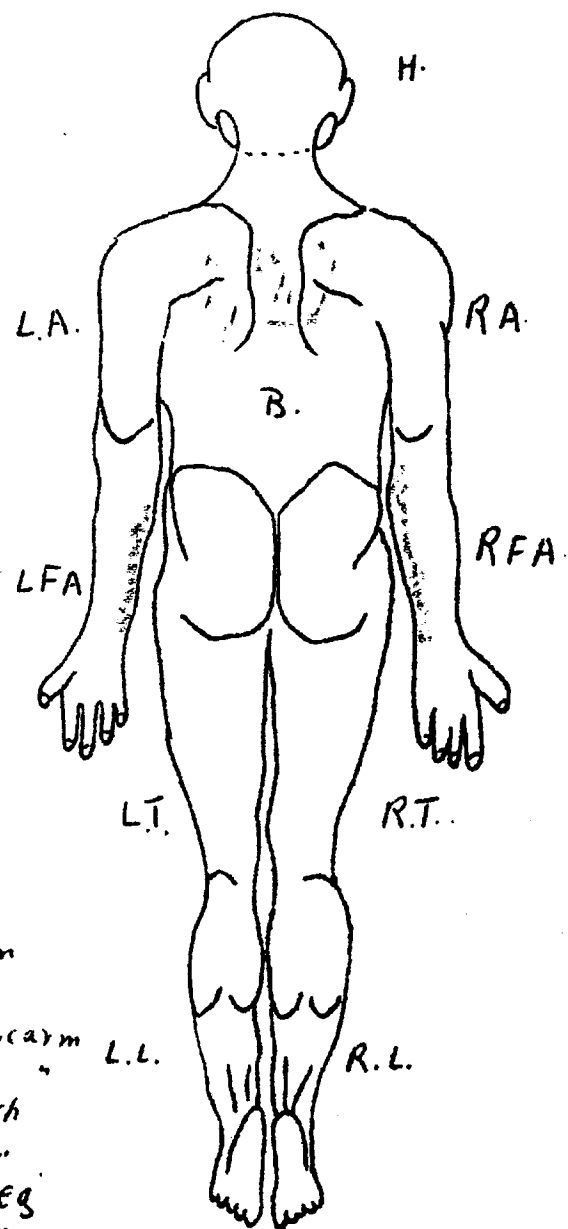
Ch. and B. some acne spots.
 R.F.A. papular dermatitis ulnar border, elbow to wrist, also a few pustules.
 L.F.A. papular dermatitis elbow to wrist ulnar border.

Group. III.

Front.



Back.



- H. Head
- F. Face.
- Ch. Chest.
- B. Back.
- A. Abdomen
- R.A. Right Arm
- L.A. Left "
- R.F.A. Right Forearm
- L.F.A. Left " "
- R.T. Right Thigh
- L.T. Left " "
- R.L. Right Leg
- L.L. Left leg.

Name. Age. Occupation. Length of Service.

L. (P.)

38 years.

Paraffin Sheds.

30 years.

Description of Condition.

Erythema (slight) over posterior & anterior surfaces both forearms.

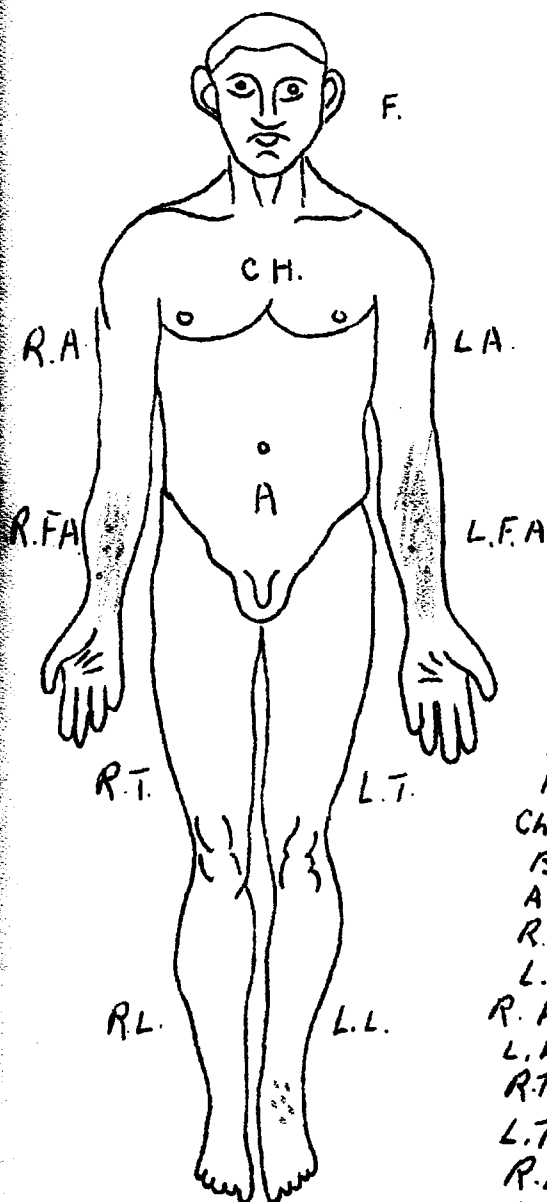
R.F.A. A few tiny papules.

L.F.A. Several papules.

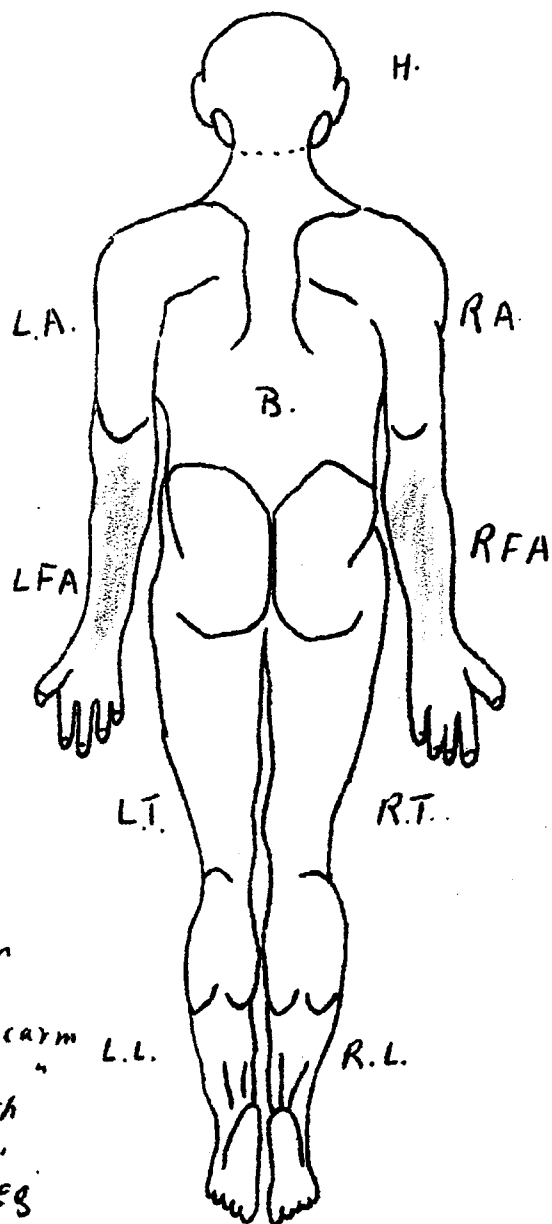
L.L. Six papules dorsum left ~~foot~~ foot.

Group. 3.

Front.



Back.



H. Head
F. Face.
CH. Chest.
B. Back.
A. Abdomen
R.A. Right Arm
L.A. Left "
R.F.A. Right Forearm
L.F.A. Left "
R.T. Right Thigh
L.T. Left "
R.L. Right Leg
L.L. Left leg.

Name. Age. Occupation. Length of Service.

(P.) 27 years. Paraffin Sheds. 5 years.

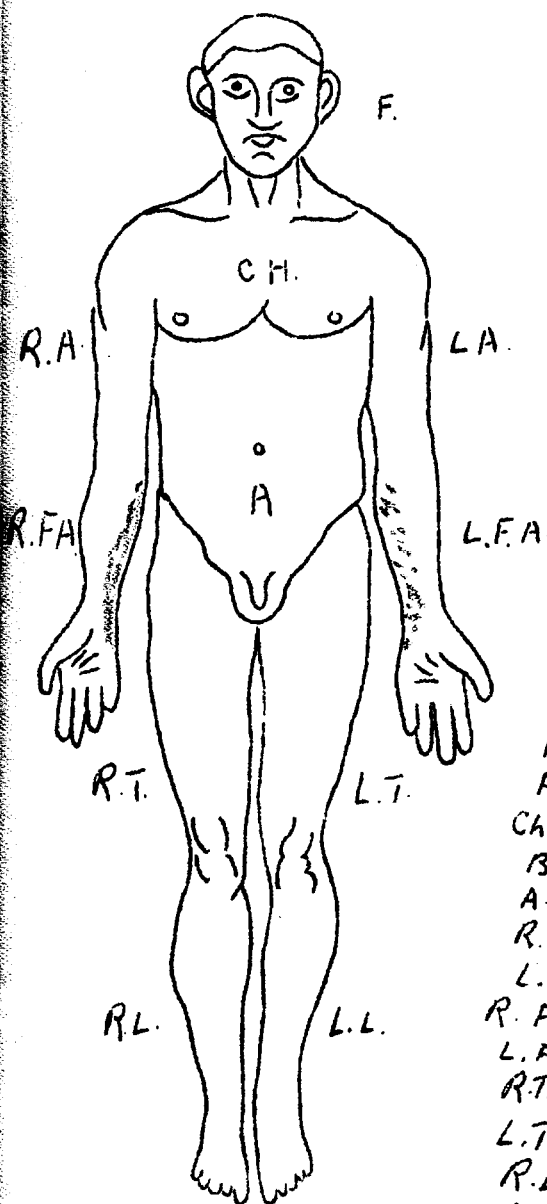
Description of Condition.

R.F.A. & L.F.A.

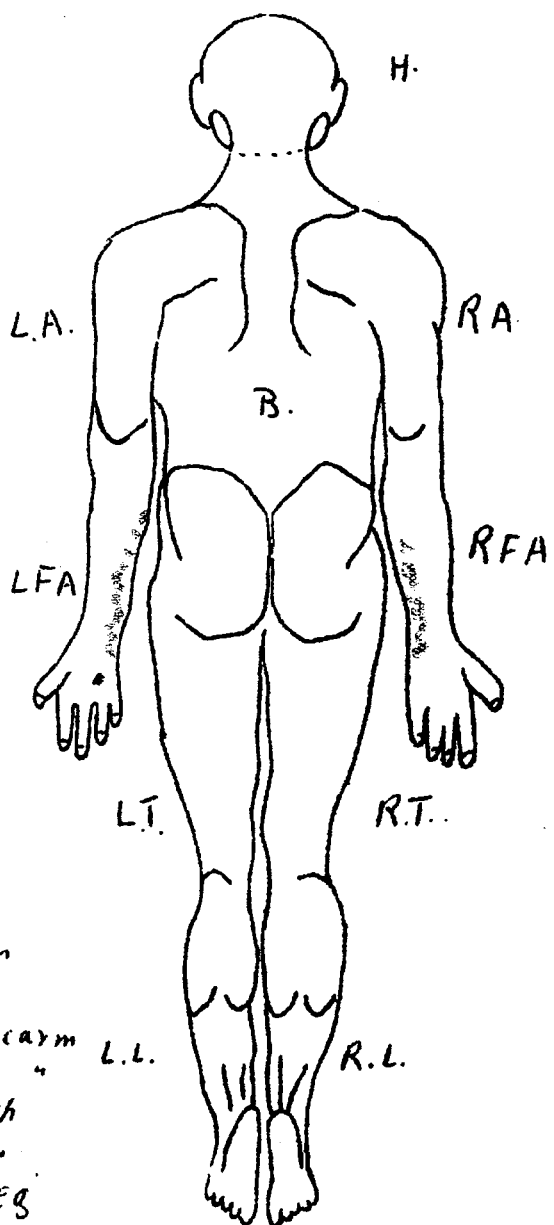
Papular dermatitis ulnar border.
Small papule base of left ring finger behind.

Group. 3.

Front.



Back.



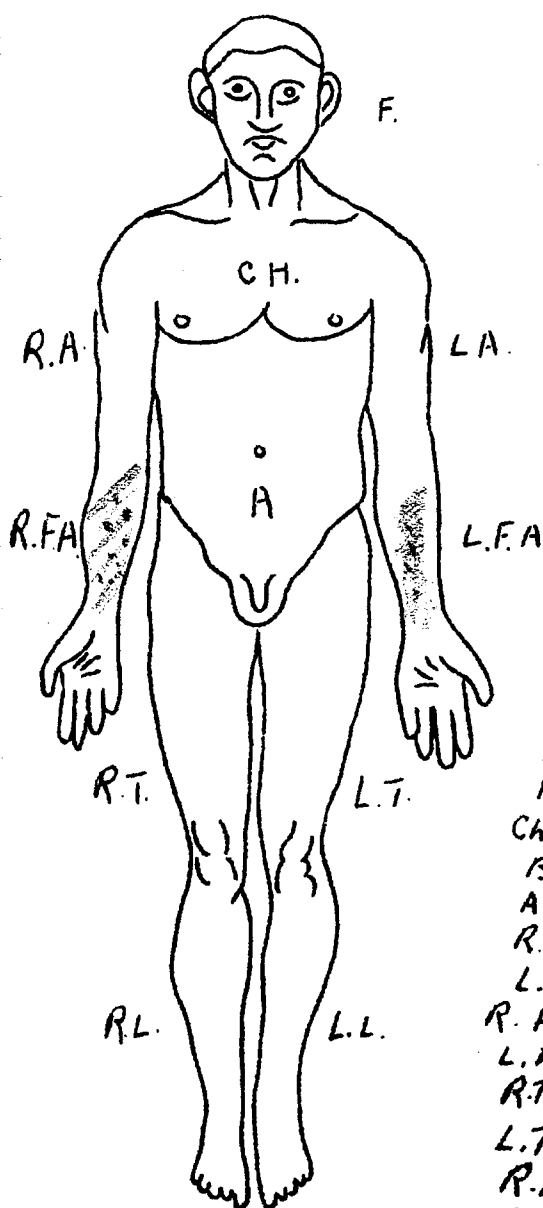
H. Head
F. Face.
CH. Chest.
B. Back.
A. Abdomen
R.A. Right Arm
L.A. Left "
R.F.A. Right Forearm
L.F.A. Left " "
R.T. Right Thigh
L.T. Left " "
R.L. Right Leg
L.L. Left leg.

<u>Name.</u>	<u>Age.</u>	<u>Occupation.</u>	<u>Length of Service.</u>
(P.)	46 years.	Paraffin Sheds.	10 years.

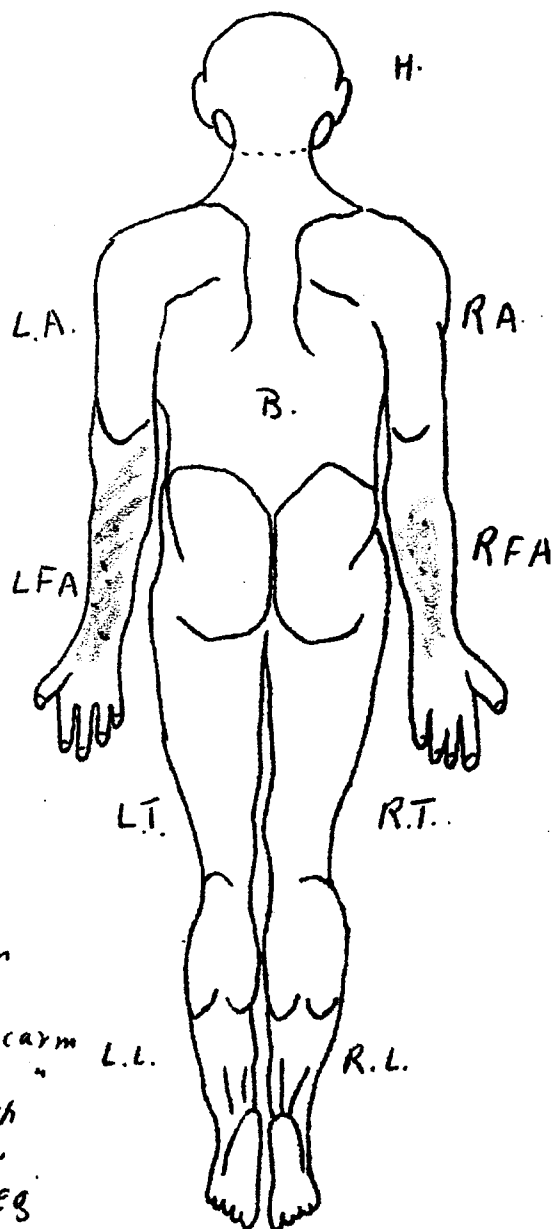
<u>Description of Condition.</u>	R.F.A. L.F.A.	Erythematous & papular dermatitis, anteriorly and posteriorly. Some papules front of each forearm.
----------------------------------	---------------	---

Group. 3.

Front.



Back.



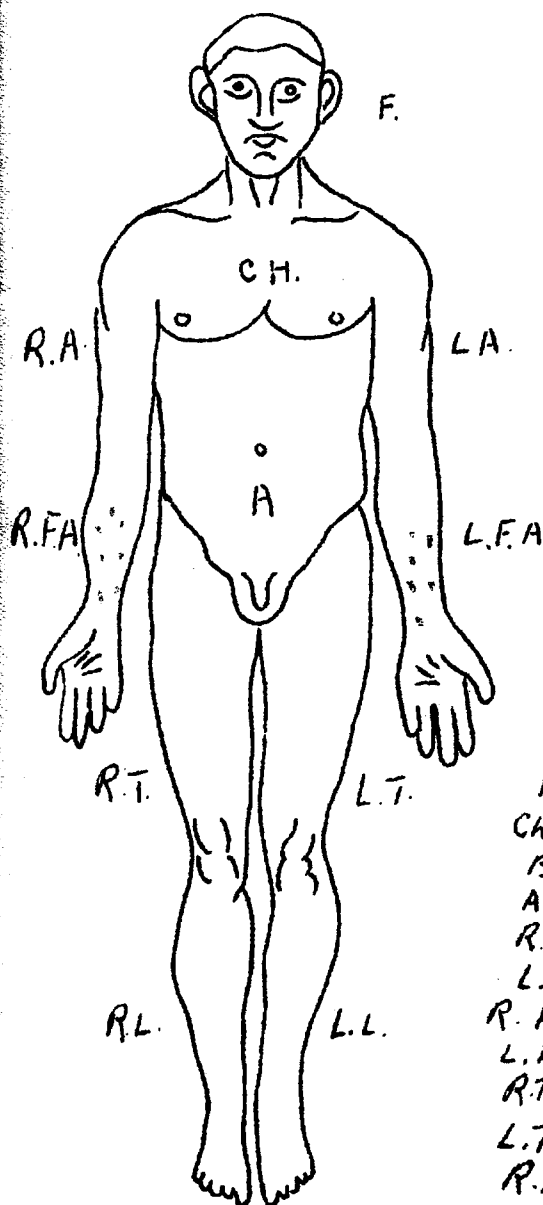
H. Head
F. Face.
Ch. Chest.
B. Back.
A. Abdomen
R.A. Right arm
L.A. Left "
R.F.A. Right Forearm
L.F.A. Left " "
R.T. Right Thigh
L.T. Left " "
R.L. Right Leg
L.L. Left leg.

<u>Name.</u>	<u>Age.</u>	<u>Occupation.</u>	<u>Length of Service.</u>
(P.)	48 years.	Paraffin Sheds.	7 years.

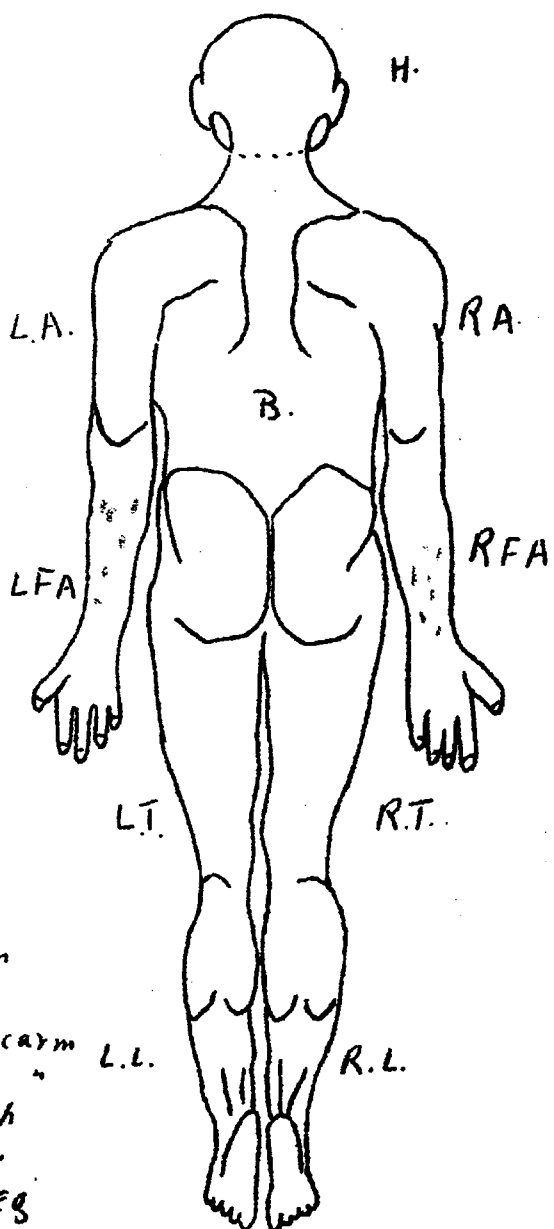
<u>Description of Condition.</u>	<u>R.F.A. & L.F.A.</u>	<u>Slight pustular dermatitis anteriorly & posteriorly.</u>
----------------------------------	----------------------------	---

Group. 3.

Front.



Back.



H. Head
 F. Face.
 Ch. Chest.
 B. Back.
 A. Abdomen
 R.A. Right arm
 L.A. Left "
 R.F.A. Right Forearm
 L.F.A. Left "
 R.T. Right Thigh
 L.T. Left "
 R.L. Right Leg
 L.L. Left leg.

Name.

Age.

Occupation.

Length of Service.

T. (P.)

29 years.

Paraffin Sheds.

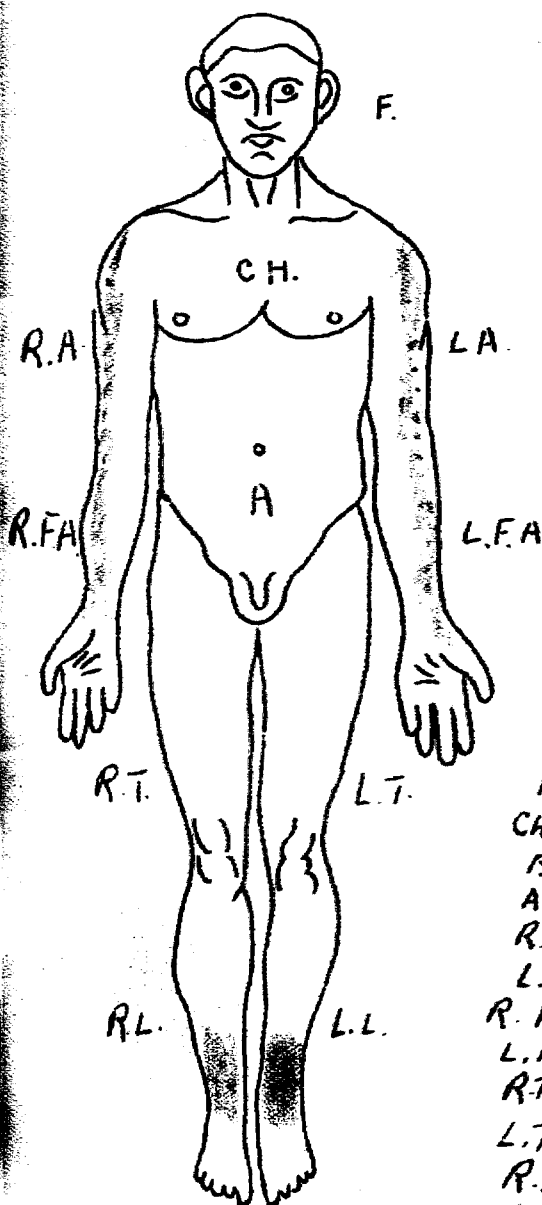
1½ years.

Description of Condition.

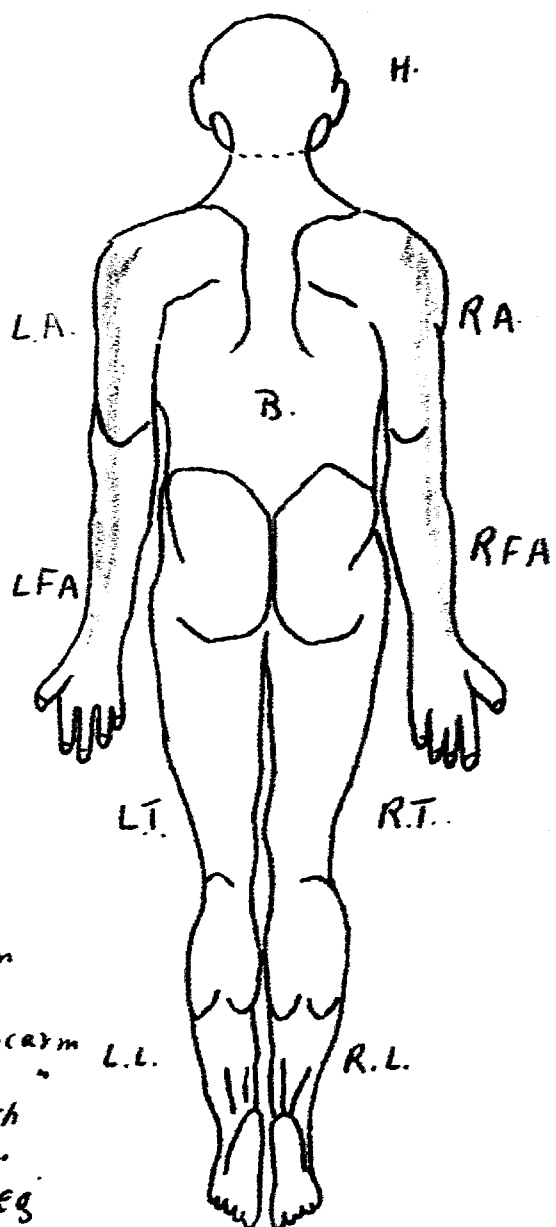
Papular & erythematous dermatitis front & back of both forearms and outer sides of both arms to shoulders L.L. & R.L. Erythematous & papular dermatitis anterior aspects of both ankles, left being worse.

Group. 3.

Front.



Back.



H. Head
F. Face
Ch. Chest
B. Back
A. Abdomen
R.A. Right Arm
L.A. Left "
R.F.A. Right Forearm
L.F.A. Left "
R.T. Right Thigh
L.T. Left "
R.L. Right Leg
L.L. Left leg.

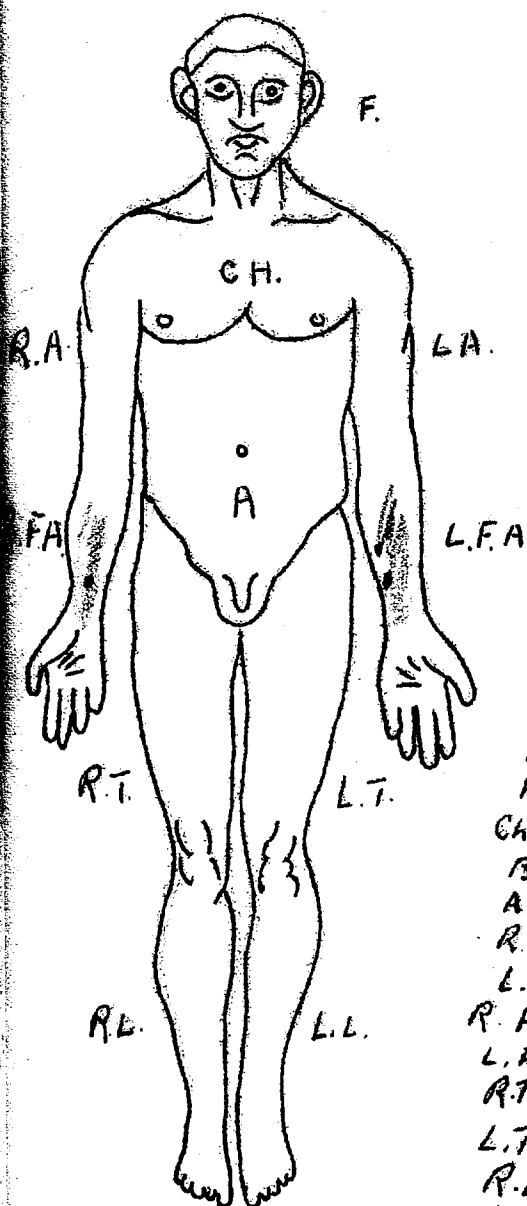
Name. (P.) Age. 52 years. Occupation. Paraffin Sheds Length of Service. 15 years.

Description of Condition.

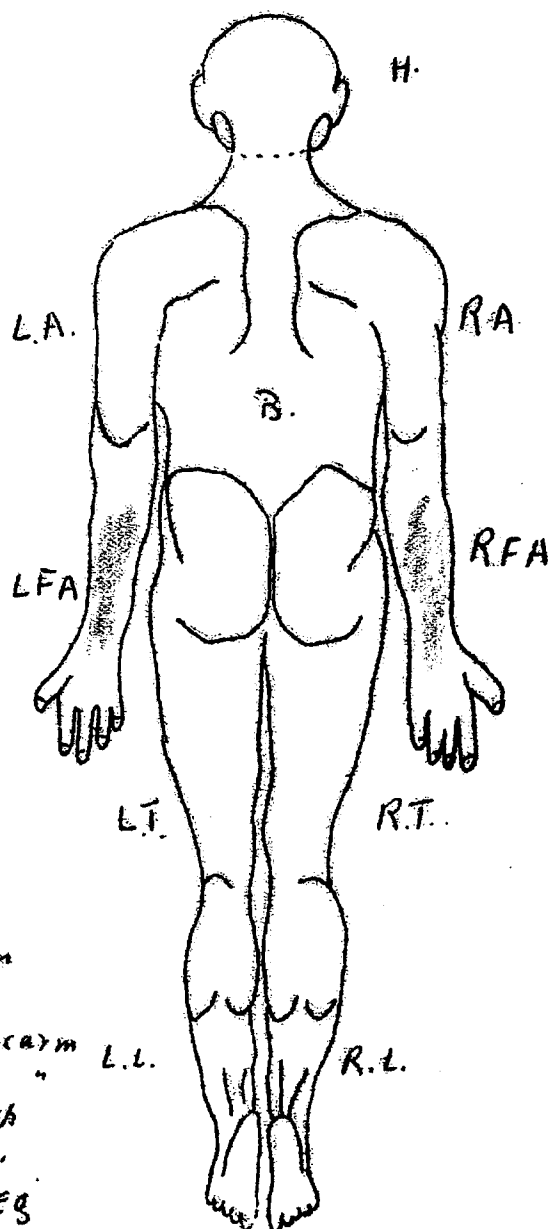
Erythematous dermatitis both forearms back & front.
 L.F.A. Two papules ulnar border.
 R.F.A. One papule anterior surface.

Group. 3.

Front.



Back.



H. Head
 F. Face.
 CH. Chest.
 B. Back.
 A. Abdomen
 R.A. Right Arm
 L.A. Left "
 R.F.A. Right Forearm
 L.F.A. Left " "
 R.T. Right Thigh
 L.T. Left " "
 R.L. Right Leg
 L.L. Left leg.

Name. Age. Occupation. Length of Service.

nn A.(P.) 25 years. Paraffin Sheds. 4 years.

Description of Condition.

R.F.A. & L.F.A.

Papular dermatitis posterior and anterior surfaces, the right being rather worse than the left.

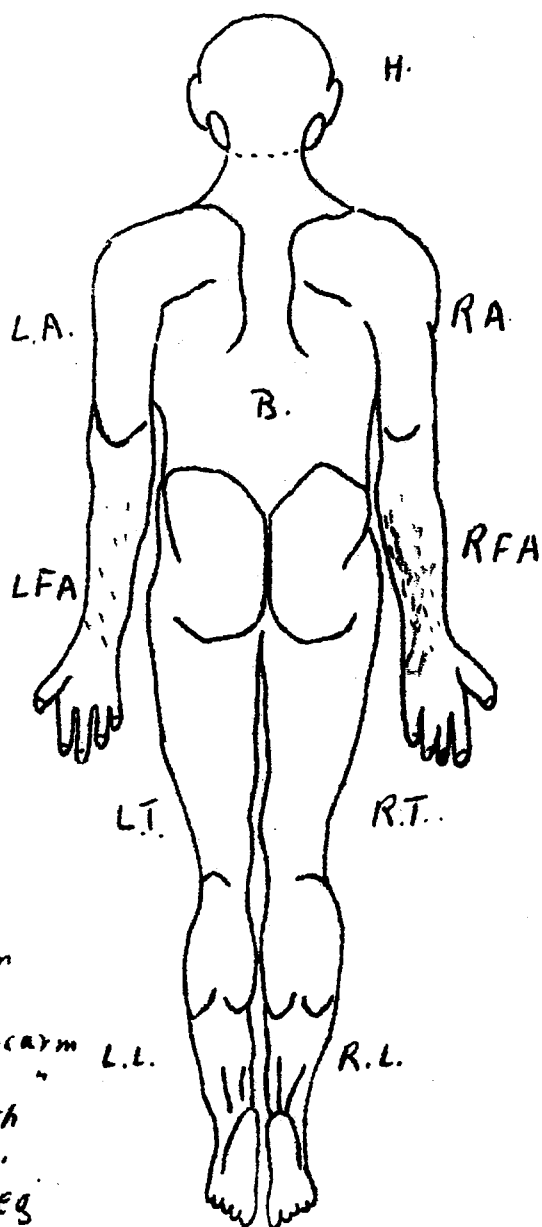
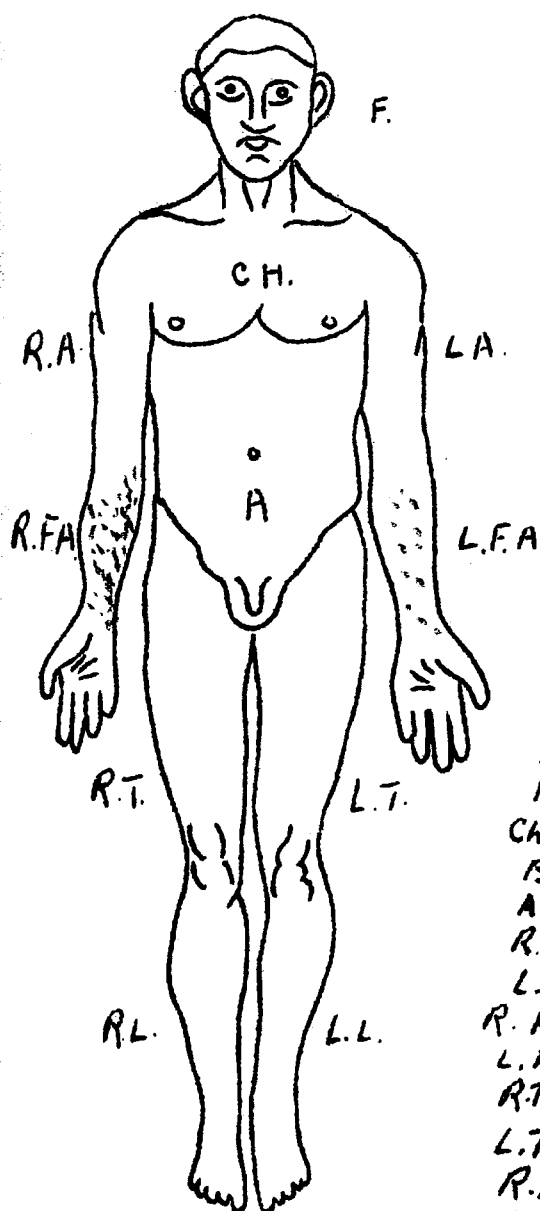
Numerous papules ulnar border R.F.A.

Group.

GROUP 3.

Front.

Back.



H. Head
F. Face
CH. Chest
B. Back
A. Abdomen
R.A. Right Arm
L.A. Left "
R.F.A. Right Forearm
L.F.A. Left "
R.T. Right Thigh
L.T. Left "
R.L. Right Leg
L.L. Left leg.

Name. Age. Occupation. Length of Service.

C. (P.) 27 years. Paraffin Sheds. 3 months.

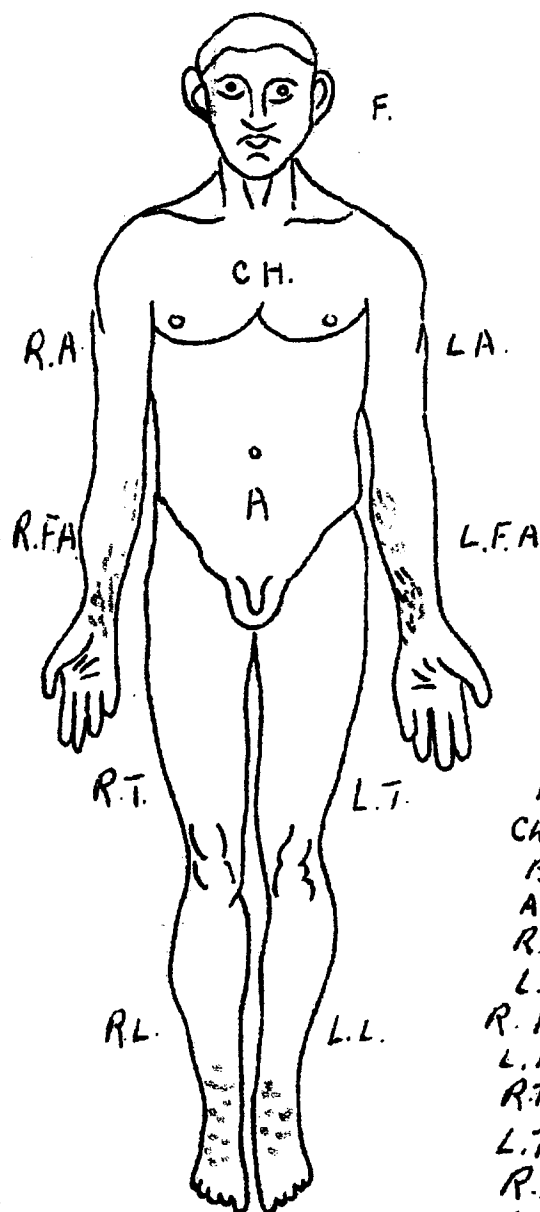
Description of Condition.

R.F.A. & L.F.A. Papular dermatitis over ulnar borders, worse above the wrists.

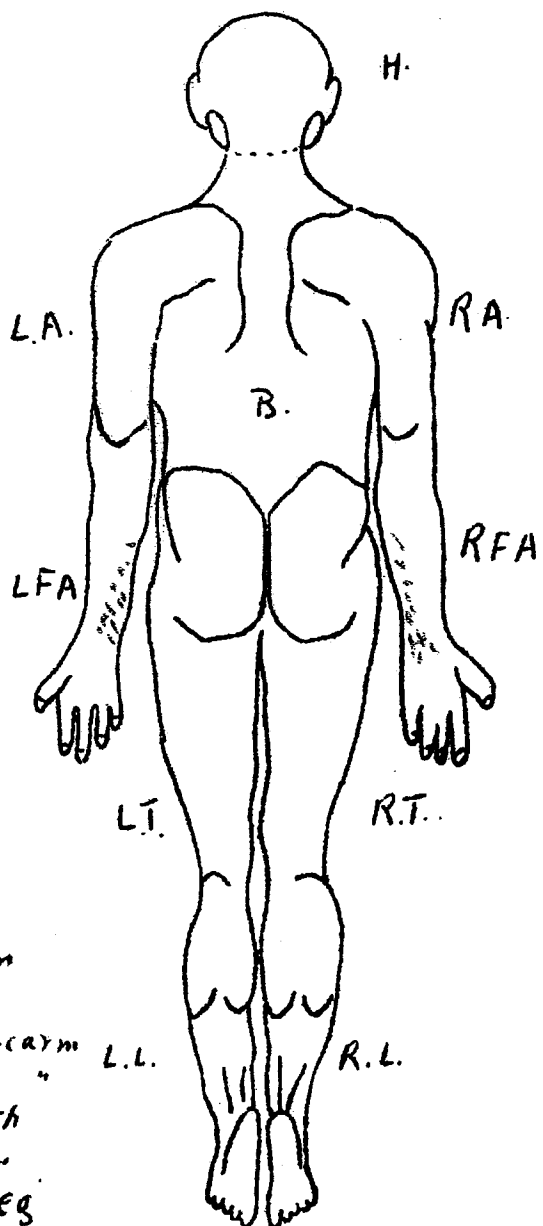
L.L. & R.L. Papular dermatitis over dorsa and in front of ankles.

Group. 3.

Front.



Back.



H. Head
F. Face.
Ch. Chest.
B. Back.
A. Abdomen
R.A. Right Arm
L.A. Left "
R.F.A. Right Forearm
L.F.A. Left " "
R.T. Right Thigh
L.T. Left " "
R.L. Right Leg
L.L. Left leg.

Name. Age. Occupation. Length of Service.

C. (P.) 48 years. Paraffin Sheds. 12 years.

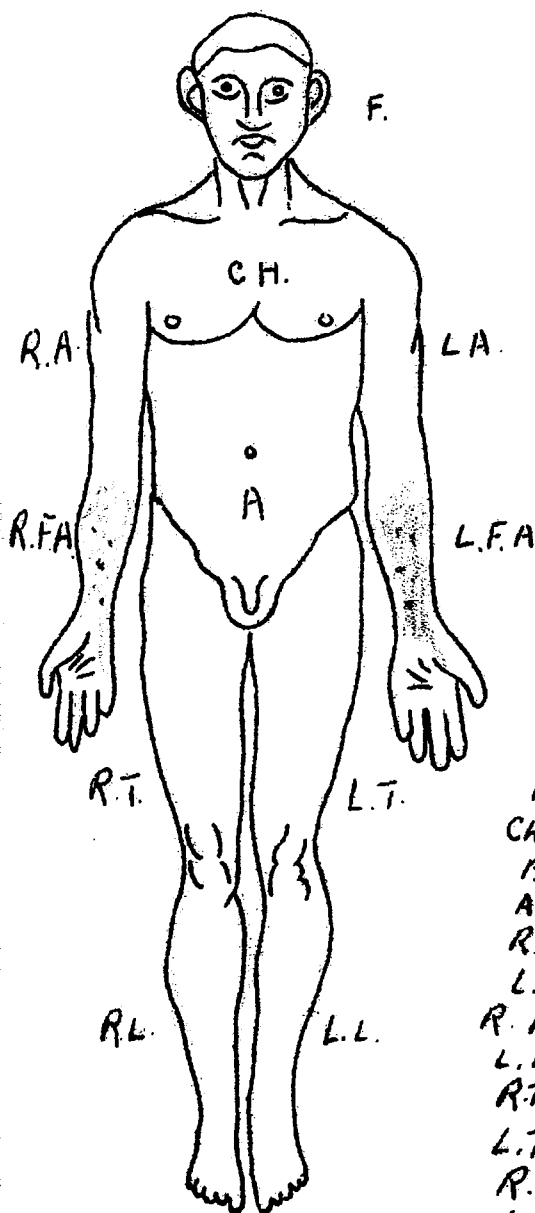
Description of Condition.

R.F.A. & L.F.A.

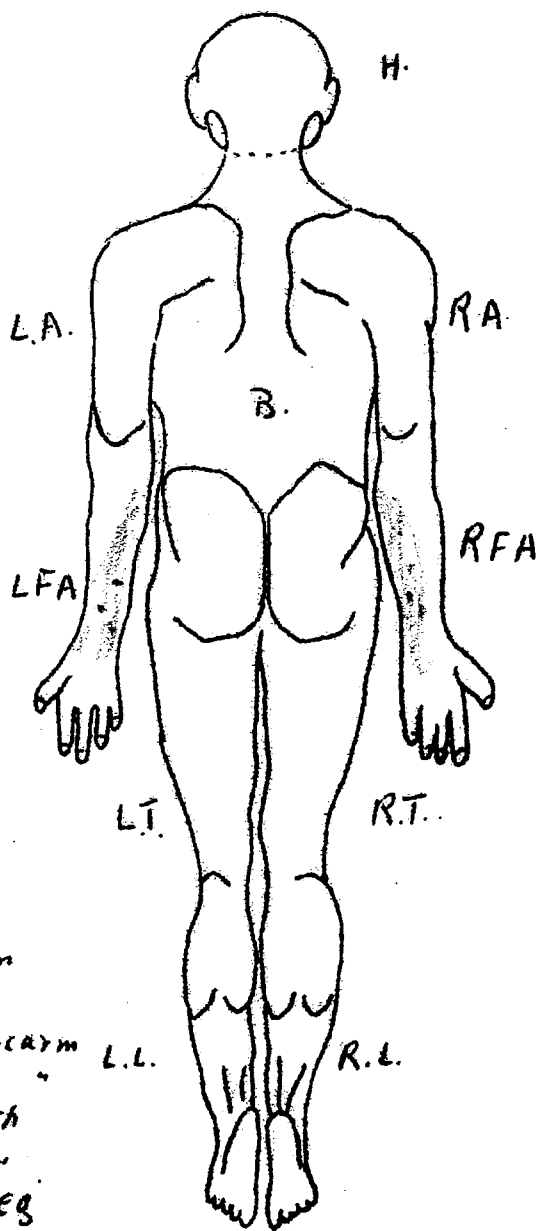
Slight erythematous dermatitis posterior and anterior surfaces. Some flattened papules both forearms.

Group. 3.

Front.



Back.



H. Head
F. Face
CH. Chest
B. Back
A. Abdomen
R.A. Right Arm
L.A. Left "
R.F.A. Right Forearm
L.F.A. Left "
R.T. Right Thigh
L.T. Left "
R.L. Right Leg
L.L. Left leg.

Name. Age. Occupation. Length of Service.

C. (P.) 48 years. Paraffin Sheds. 12 years.

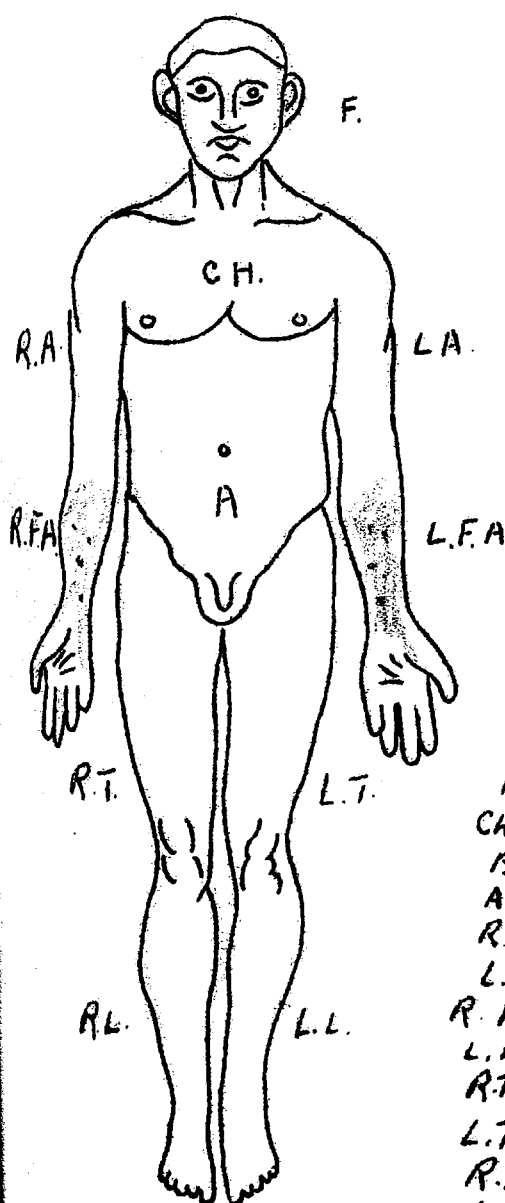
Description of Condition.

R.F.A. & L.F.A.

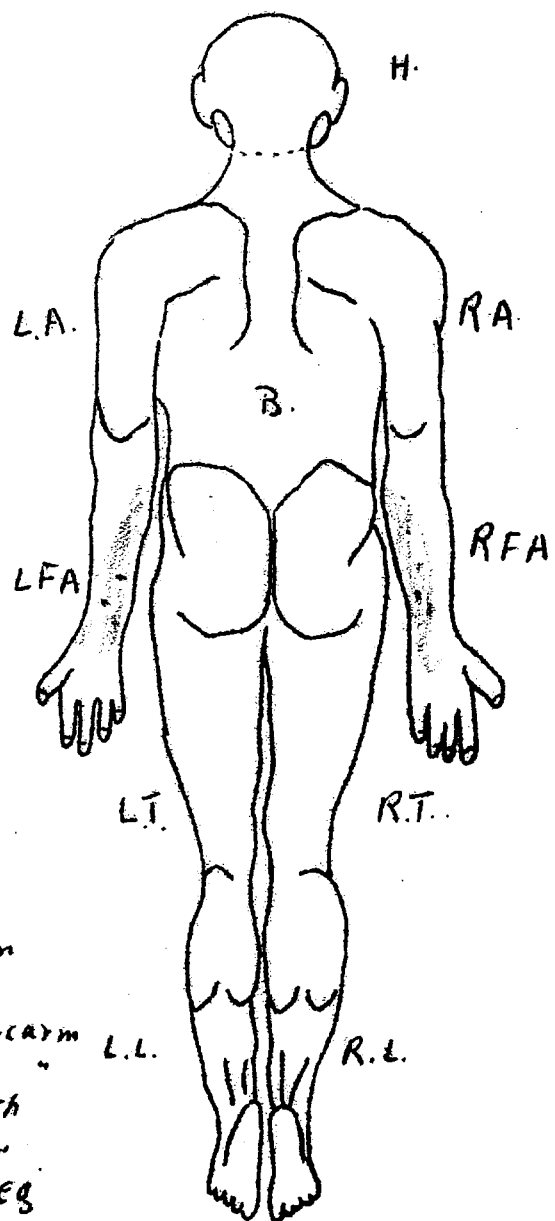
Slight erythematous dermatitis posterior and anterior surfaces. Some flattened papules both forearms.

Group. 3.

Front.



Back.



H. Head
F. Face.
Ch. Chest.
B. Back.
A. Abdomen
R.A. Right Arm
L.A. Left "
R.F.A. Right Forearm
L.F.A. Left "
R.T. Right Thigh
L.T. Left "
R.L. Right Leg
L.L. Left leg.

Name. Age. Occupation. Length of Service.

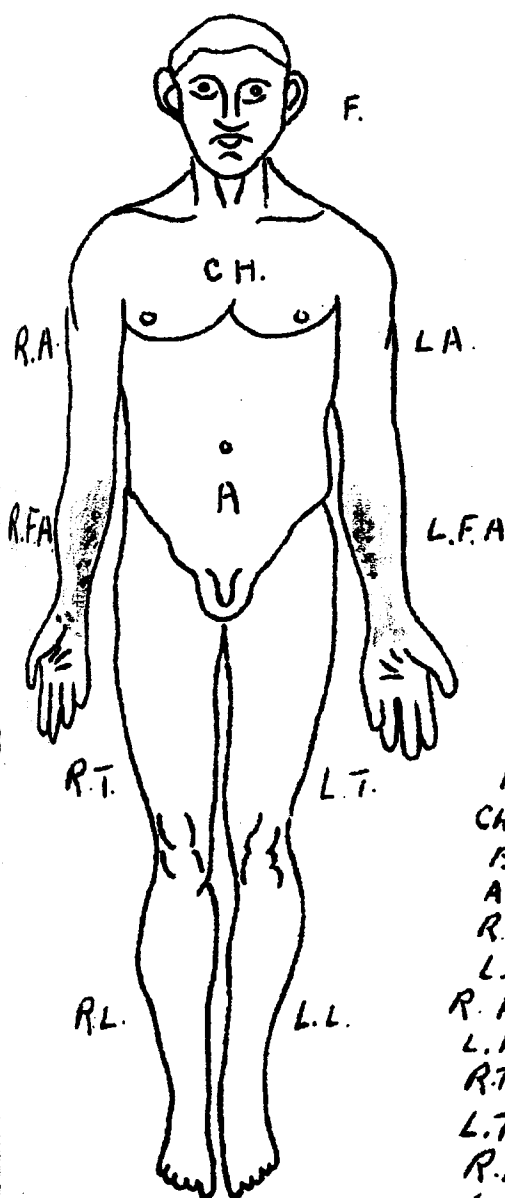
P. (P.) 55 years. Paraffin Sheds. 15 years.

Description of Condition.

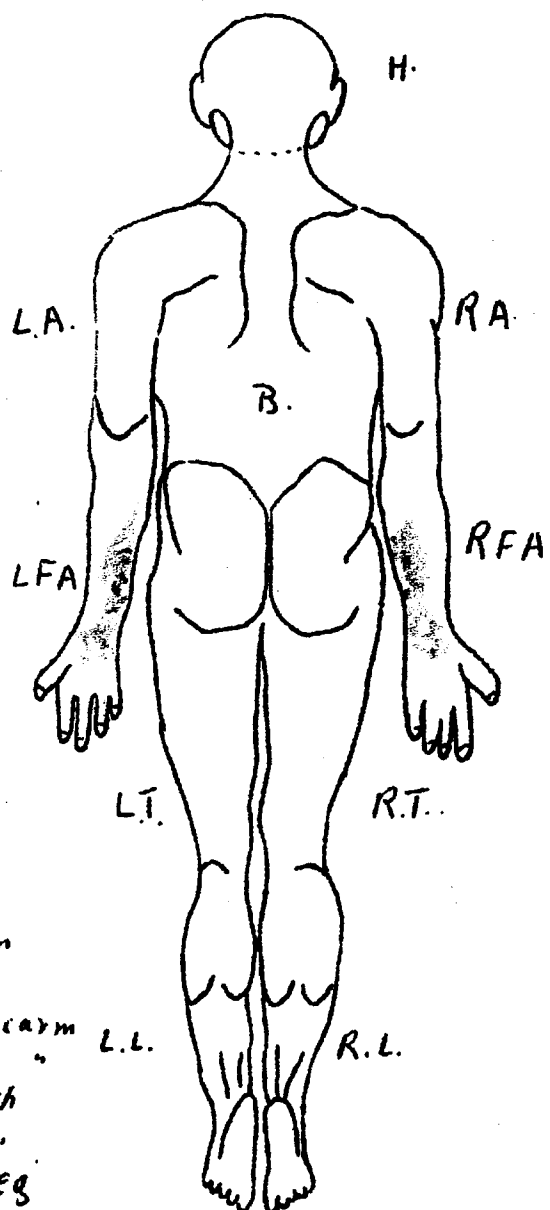
R.F.A. & L.F.A. Practically healed erythematous and papular dermatitis both forearms, especially on ulnar surfaces. Warty papules anterior and posterior surfaces of wrist.

Group. 3.

Front.



Back.



H. Head
F. Face.
CH. Chest
B. Back.
A. abdomen
R.A. Right arm
L.A. Left "
R.F.A. Right Forearm
L.F.A. Left " "
R.T. Right Thigh
L.T. Left " "
R.L. Right Leg
L.L. Left leg.

Name. Age. Occupation. Length of Service.

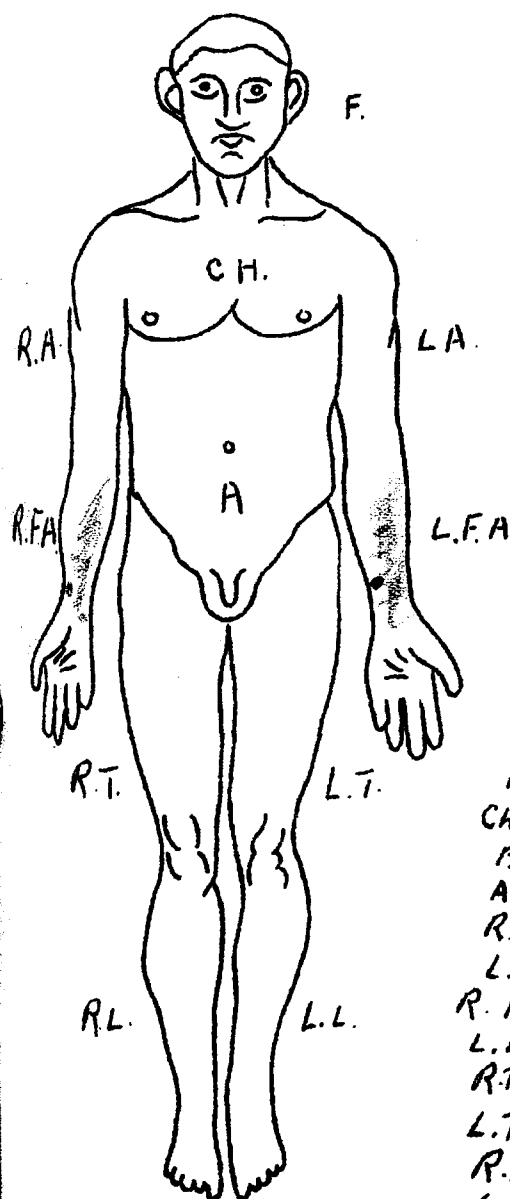
G. (P.) 48 years. Paraffin Sheds. 25 years.

Description of Condition.

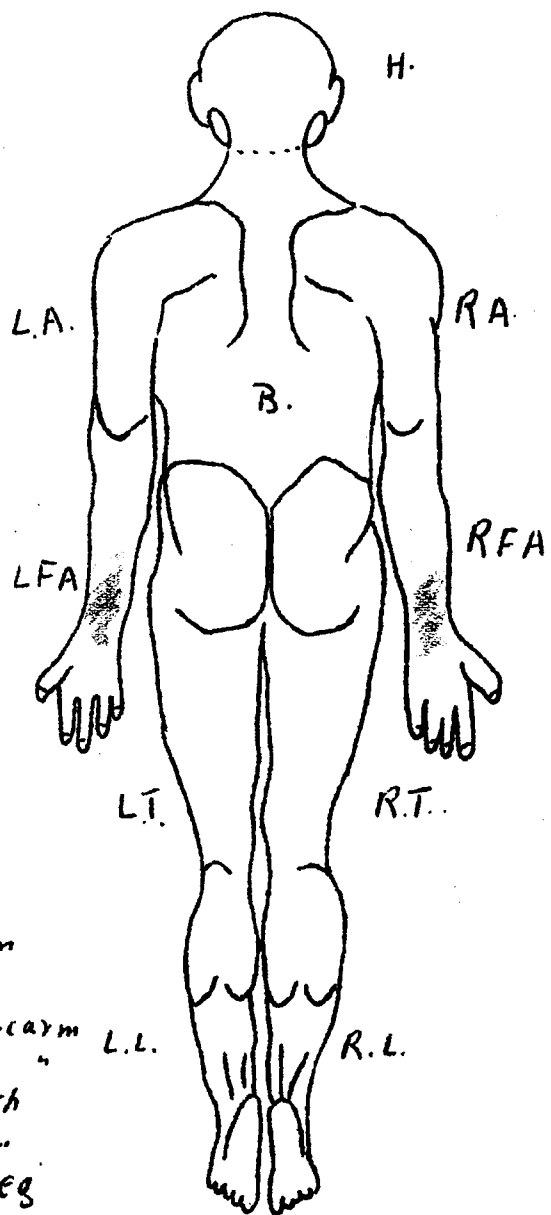
R.F.A. & L.F.A. Slight erythematous dermatitis posterior surfaces of wrists and anterior aspects of both forearms. slight wartiness of forearms. One papule ulnar border L.F.A.

Group. 3.

Front.



Back.



- H. Head
- F. Face
- CH. Chest
- B. Back
- A. Abdomen
- R.A. Right Arm
- L.A. Left "
- R.F.A. Right Forearm
- L.F.A. Left " "
- R.T. Right Thigh
- L.T. Left " "
- R.L. Right Leg
- L.L. Left leg.

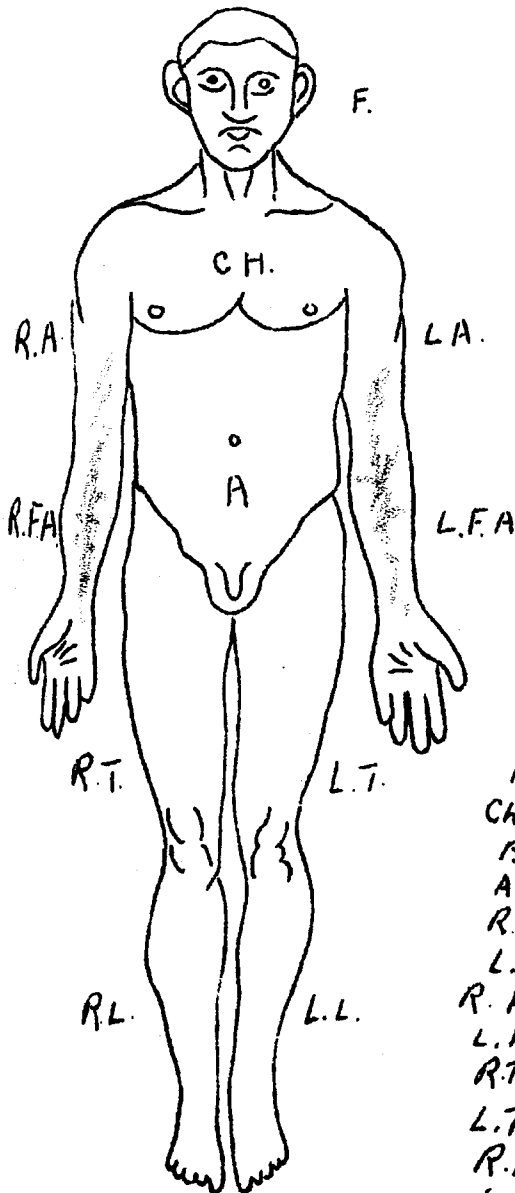
name. Age. Occupation. Length of Service.

L. (P.) 53 years. Paraffin Sheds. 10 years.

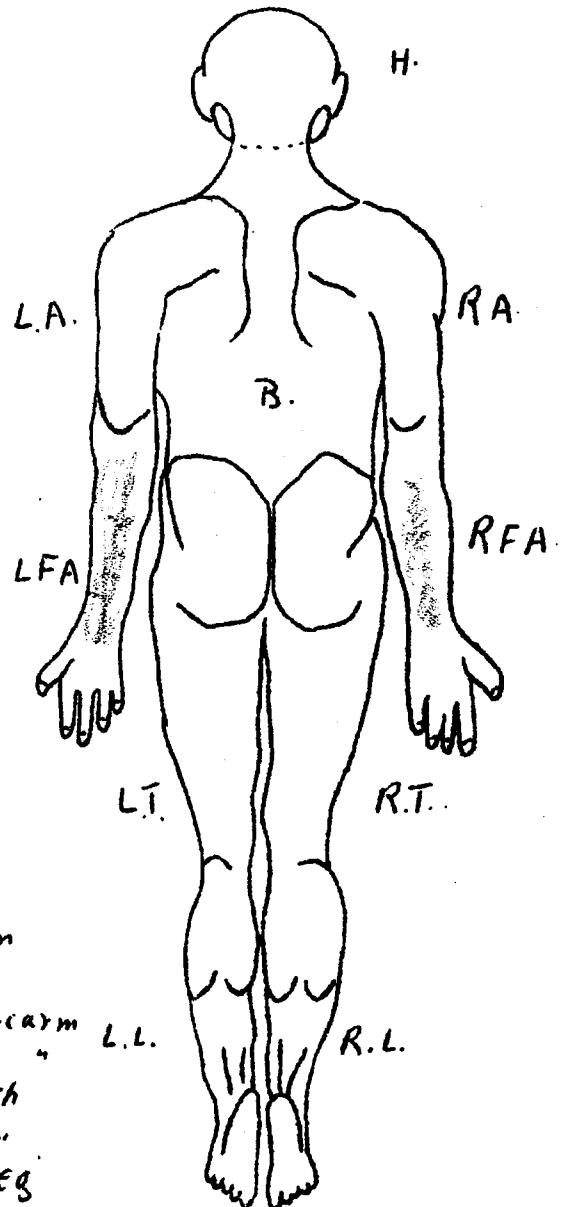
Description of Condition. R.A. R.F.A. Slight erythematous dermatitis with warty scales front & back.
 L.A. L.F.A. Ditto.

Group. 3.

Front.



Back.



H. Head
 F. Face.
 Ch. Chest.
 B. Back.
 A. Abdomen
 R.A. Right Arm
 L.A. Left "
 R.F.A. Right Forearm
 L.F.A. Left " "
 R.T. Right Thigh
 L.T. Left " "
 R.L. Right Leg
 L.L. Left leg.

Name. Age. Occupation. Length of Service.

G. McG. (P.)

38 years.

Paraffin Sheds.

4 years.

Description of Condition.

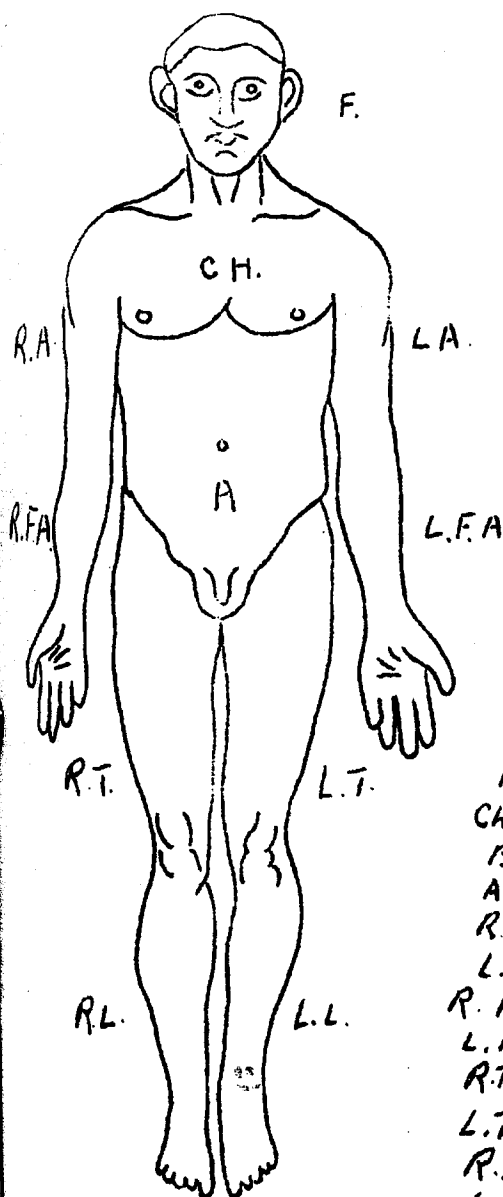
B. A few pustules over both shoulders.

R.F.A. & L.F.A. A few pustular papules behind elbows & posterior aspects of lower third of each forearm.

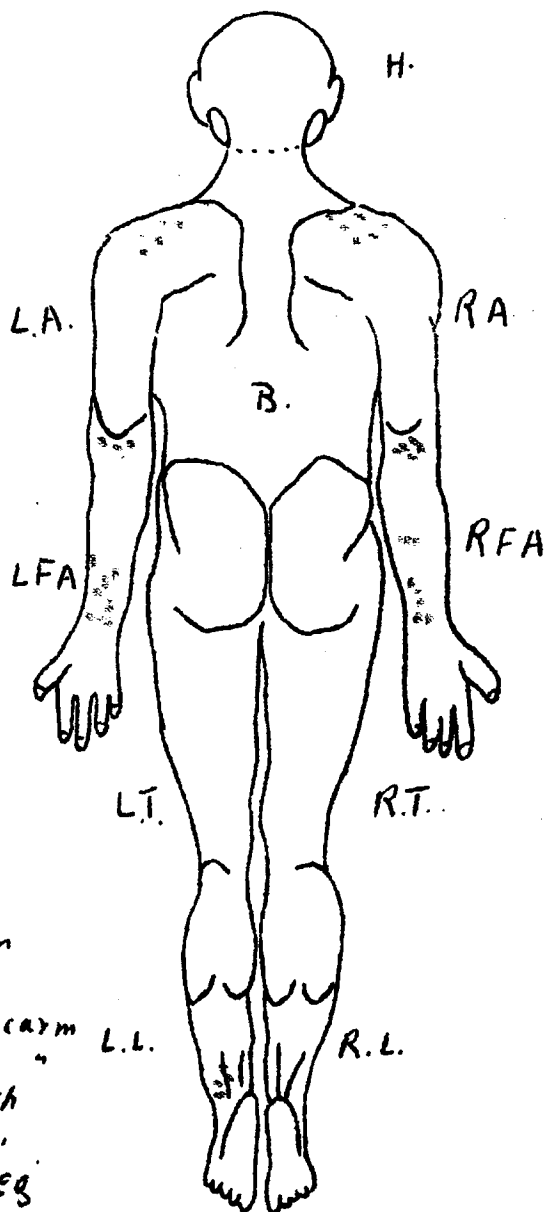
Six papules around left ankle.

Group. 3.

Front.



Back.



H. Head
F. Face
CH. Chest
B. Back
A. Abdomen
R.A. Right Arm
L.A. Left "
R.F.A. Right Forearm
L.F.A. Left "
R.T. Right Thigh
L.T. Left "
R.L. Right Leg
L.L. Left leg.

Name. Age. Occupation. Length of Service.

No. (P.).

39 years.

Paraffin Sheds.

8 years.

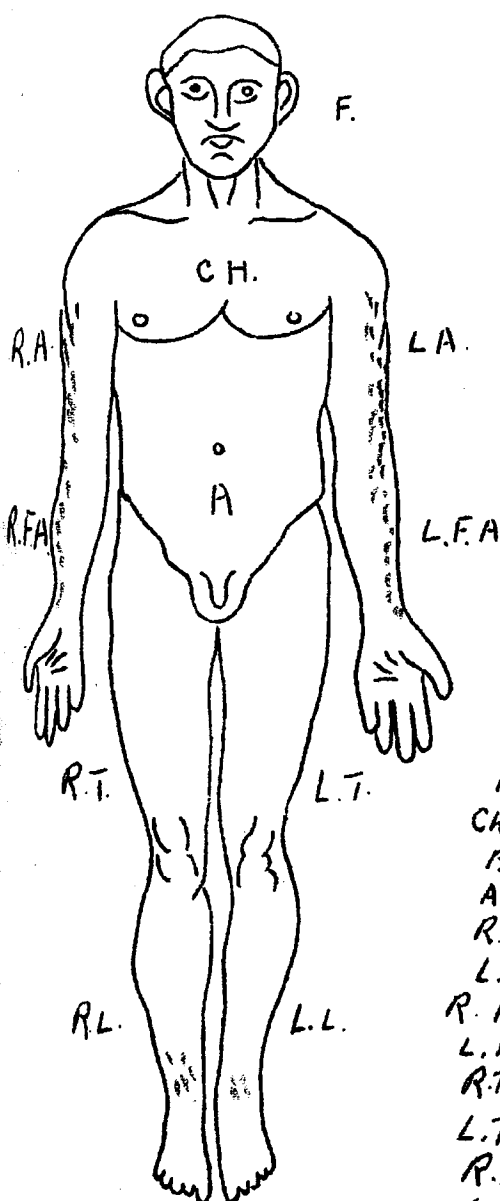
Description of Condition.

H. One papule back of neck.
R.A. L.A. (Papular dermatitis external aspect
R.F.A. L.F.A.) left worse than right.

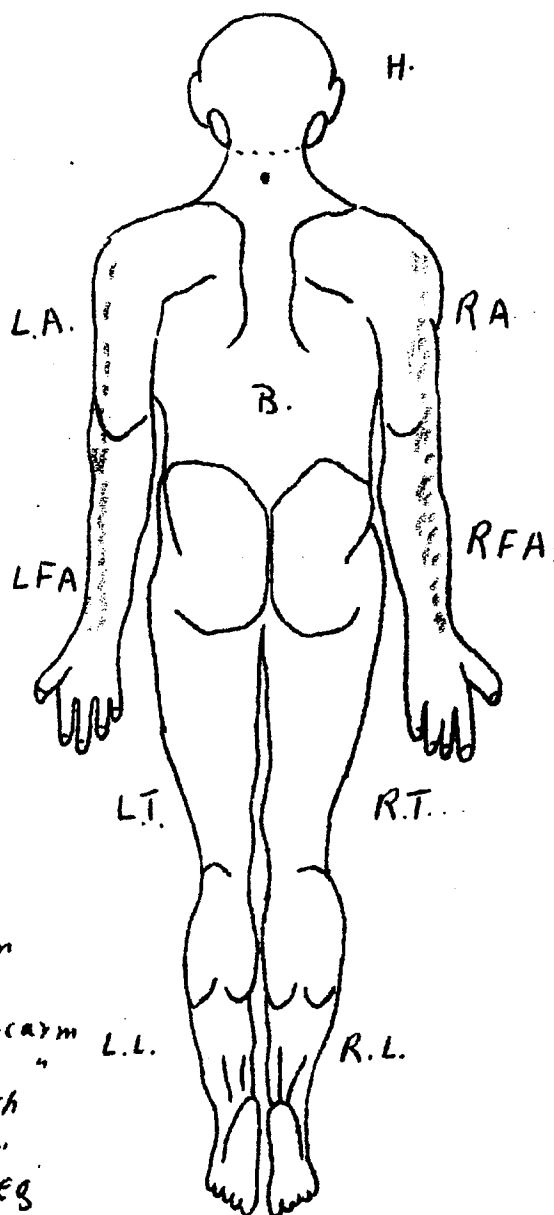
L.L. & R.L. Slight papular dermatitis anterior surface of ankle. right worse than left.

Group. 3.

Front.



Back.



H. Head
F. Face.
CH. Chest.
B. Back.
A. Abdomen
R.A. Right Arm
L.A. Left "
R.F.A. Right Forearm
L.F.A. Left " "
R.T. Right Thigh
L.T. Left " "
R.L. Right Leg
L.L. Left leg.

Name.

Age.

Occupation.

Length of Service.

No. (P.).

48 years

Paraffin Sheds.

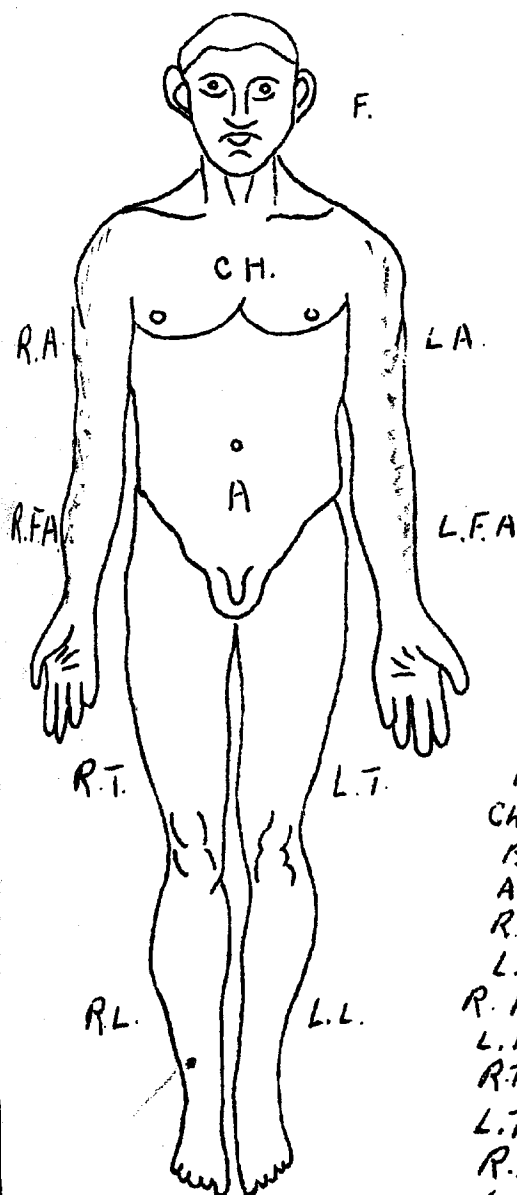
6 years.

Description of Condition.

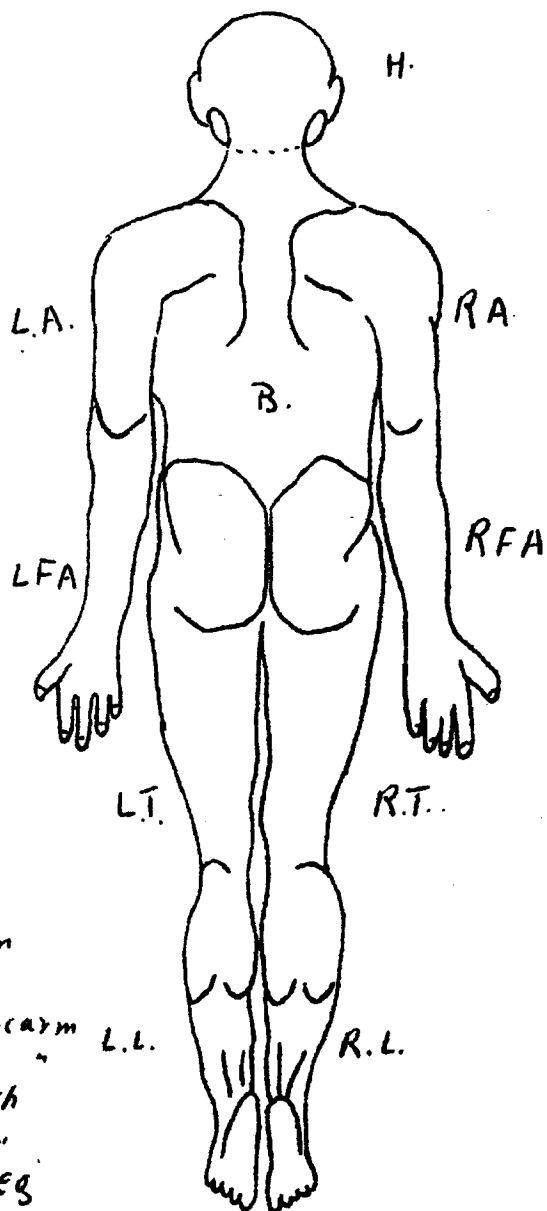
Very slight papular dermatitis outer sides arms and forearms from shoulders to wrists.
One papule outer aspect above right ankle.

Group. 3.

Front.



Back.



H. Head
F. Face.
Ch. Chest.
B. Back.
A. Abdomen
R.A. Right Arm
L.A. Left "
R.FA. Right Forearm
L.FA. Left "
R.T. Right Thigh
L.T. Left "
R.L. Right Leg
L.L. Left leg.

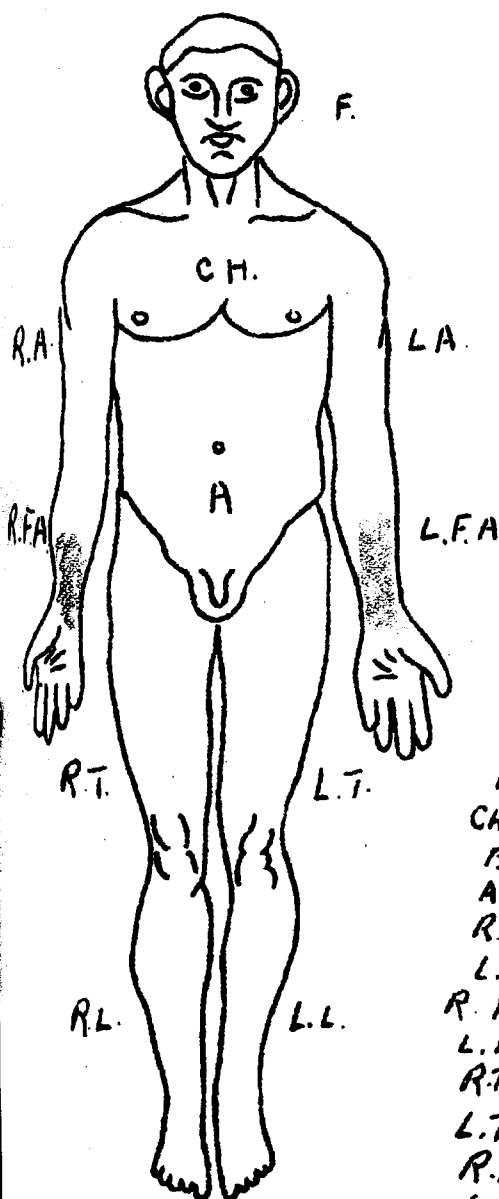
<u>Name.</u>	<u>Age.</u>	<u>Occupation.</u>	<u>Length of Service.</u>
T.B. (O).	46 yrs.	Paraffin sheds	4 yrs.

Description of Condition.

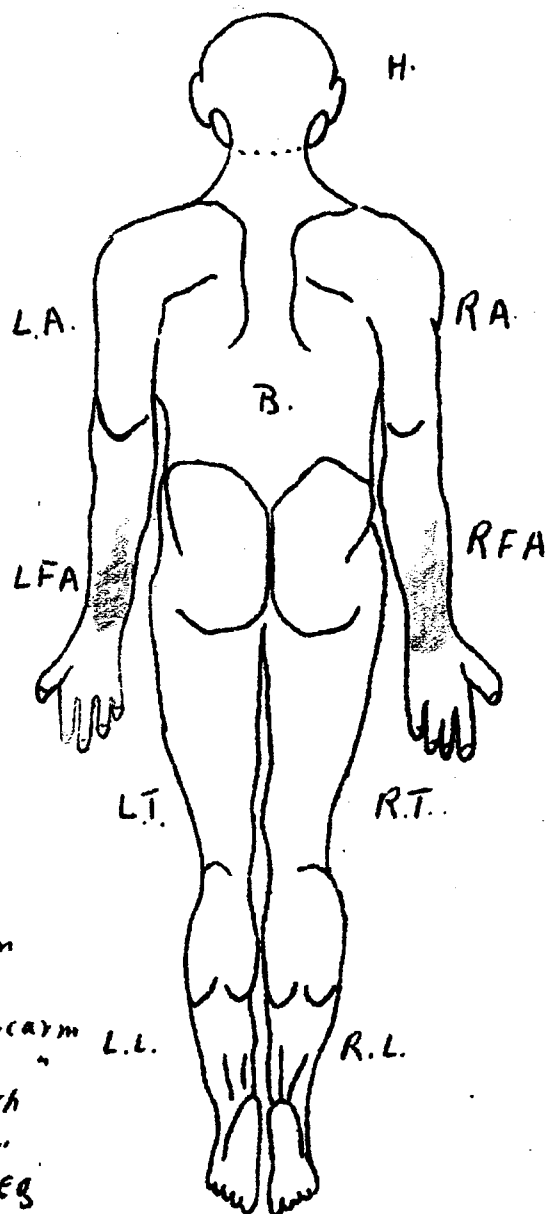
R.F.A. (Slight erythem. dermatitis above both wrists,
L.F.A. (fronts and backs.

Group. 3.

Front.



Back.



H. Head
F. Face.
Ch. Chest.
B. Back.
A. Abdomen
R.A. Right Arm
L.A. Left "
R.F.A. Right Forearm
L.F.A. Left " "
R.T. Right Thigh
L.T. Left " "
R.L. Right Leg
L.L. Left leg.

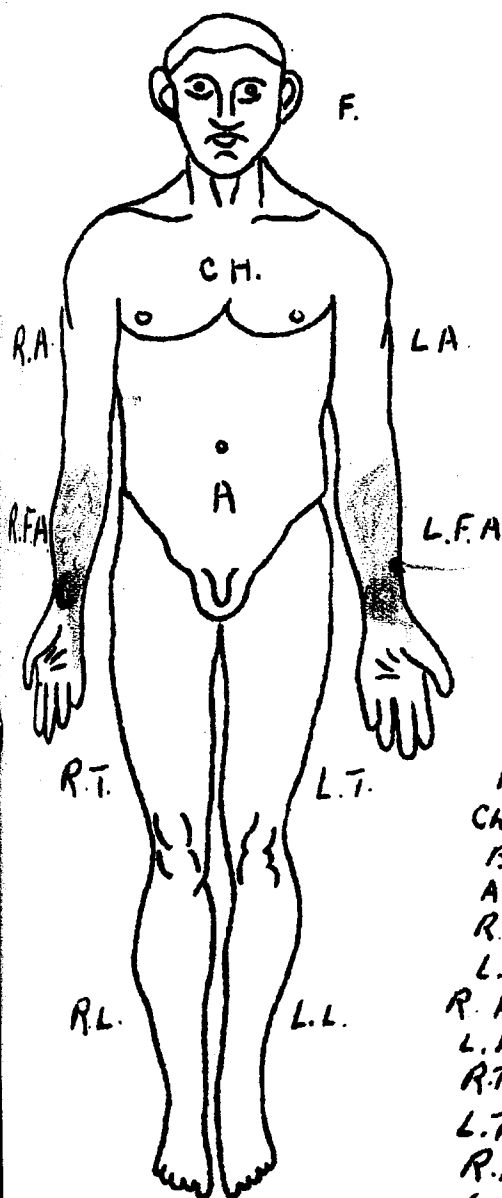
<u>Name.</u>	<u>Age.</u>	<u>Occupation.</u>	<u>Length of Service.</u>
P.K. (O).	55 yrs	Paraffin sheds	6 yrs.

Description of Condition. R.F.A. erythem. dermatitis front and back, very faint on forearm more marked above wrist. one warty nodule 2 inches above wrist behind, and one over back of wrist.

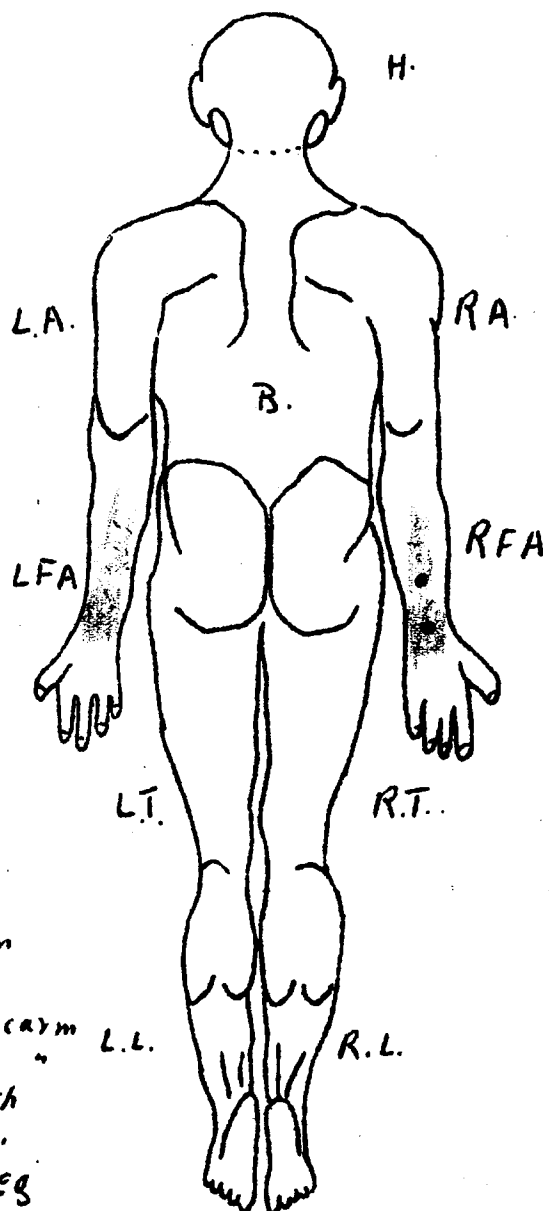
L.F.A. erythem. dermatitis as on R.F.A. and wrist. one papule outer side of forearm slightly above wrist.

Group 3.

Front.



Back.



H. Head
 F. Face.
 CH. Chest.
 B. Back.
 A. Abdomen
 R.A. Right Arm
 L.A. Left "
 R.F.A. Right Forearm
 L.F.A. Left "
 R.T. Right Thigh
 L.T. Left "
 R.L. Right Leg
 L.L. Left leg.

<u>Name.</u>	<u>Age.</u>	<u>Occupation.</u>	<u>Length of Service.</u>
D.J. (O).	56 yrs	Paraffin sheds	6 yrs .

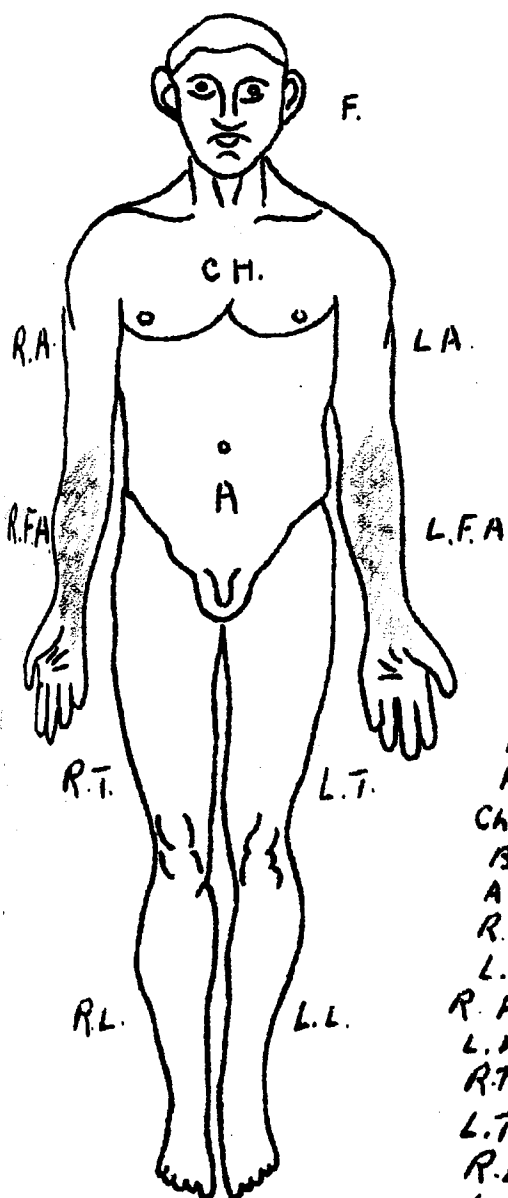
Description of Condition.

R.F.A. and L.F.A. erythematous dermatitis and scales fronts and backs of both forearms.

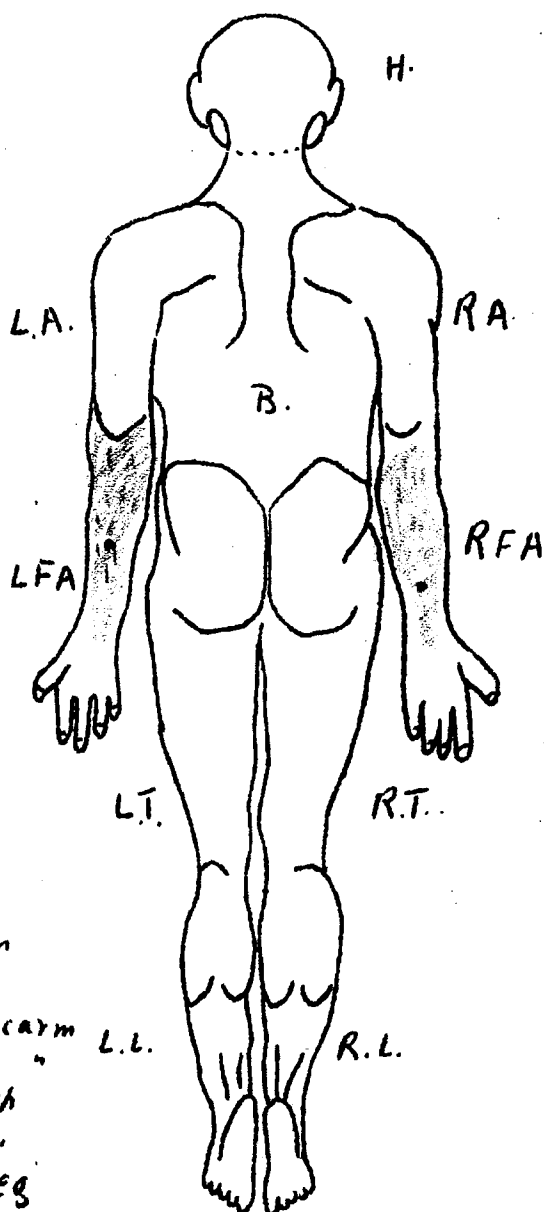
Small papule dorsal surface of each forearm .

Group. 3.

Front.



Back.



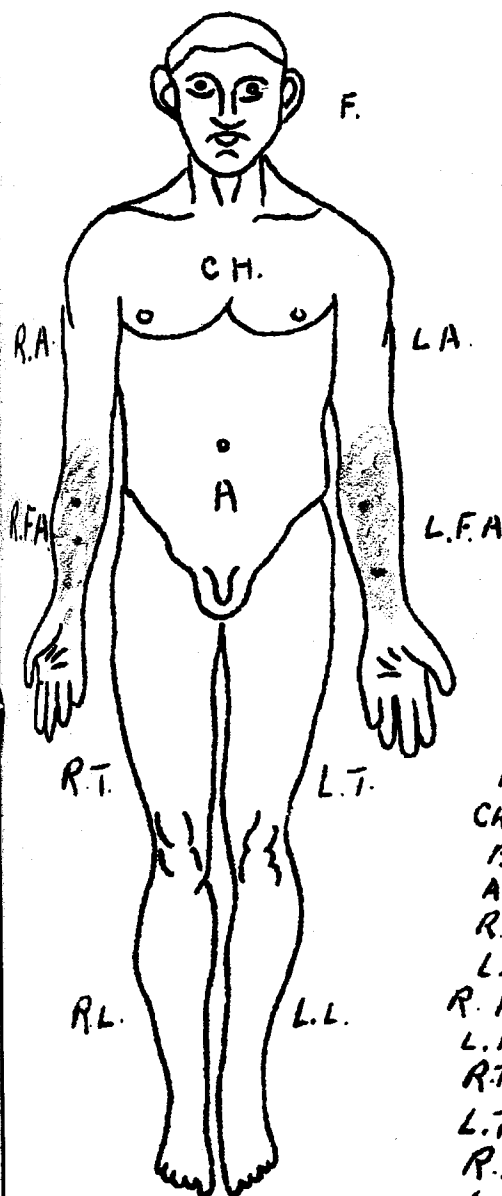
H. Head
 F. Face.
 Ch. Chest.
 B. Back.
 A. Abdomen
 R.A. Right Arm
 L.A. Left "
 R.F.A. Right Forearm
 L.F.A. Left " "
 R.T. Right Thigh
 L.T. Left " "
 R.L. Right Leg
 L.L. Left leg.

Name. Age. Occupation. Length of Service.
 J.W. (0). 29 yrs Paraffin sheds. 3 yrs.

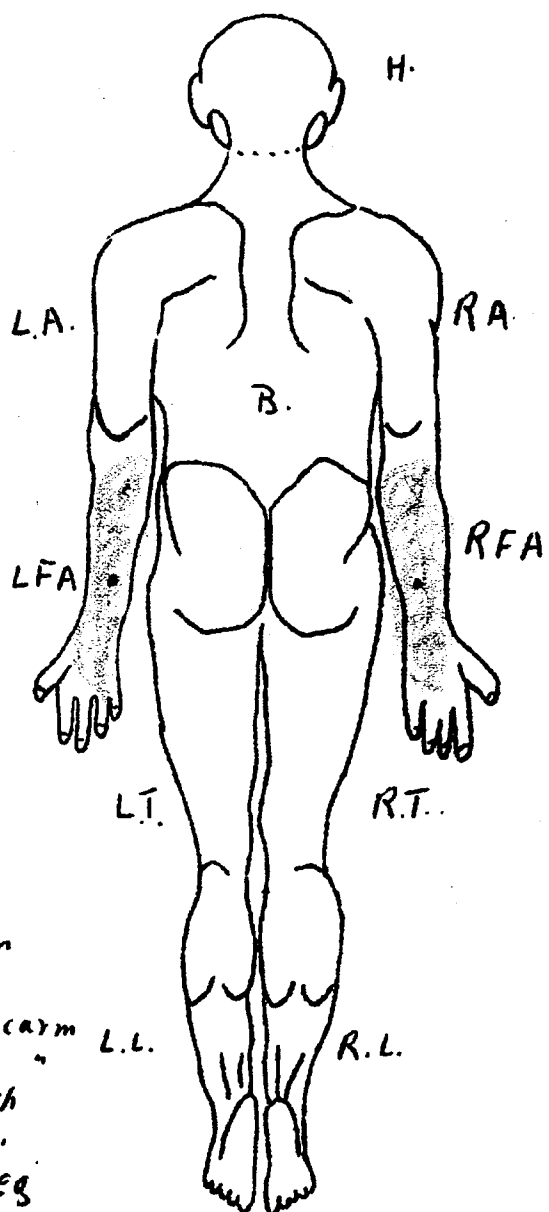
Description of Condition. R.F.A. and L.F.A. erythematous dermatitis fronts and backs. On each forearm in front two small papules. on back of each forearm is 1 papule (small).

Group. 3.

Front.



Back.



H. Head
 F. Face.
 CH. Chest.
 B. Back.
 A. Abdomen
 R.A. Right Arm
 L.A. Left "
 R.F.A. Right Forearm
 L.F.A. Left "
 R.T. Right Thigh
 L.T. Left "
 R.L. Right Leg
 L.L. Left leg.

<u>Name.</u>	<u>Age.</u>	<u>Occupation.</u>	<u>Length of Service.</u>
J.D. (O).	48 yrs	Paraffin sheds	15 yrs.

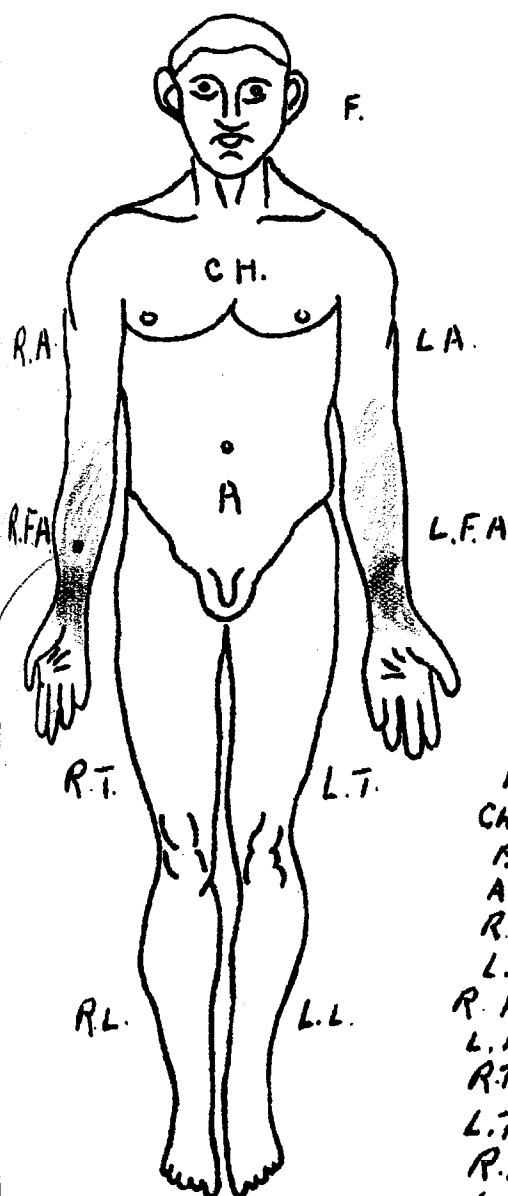
Description of Condition.

R.F.A. Erythem. dermatitis front and back, especially above wrist. 1 warty papule behind wrist and 1 middle of forearm in front.

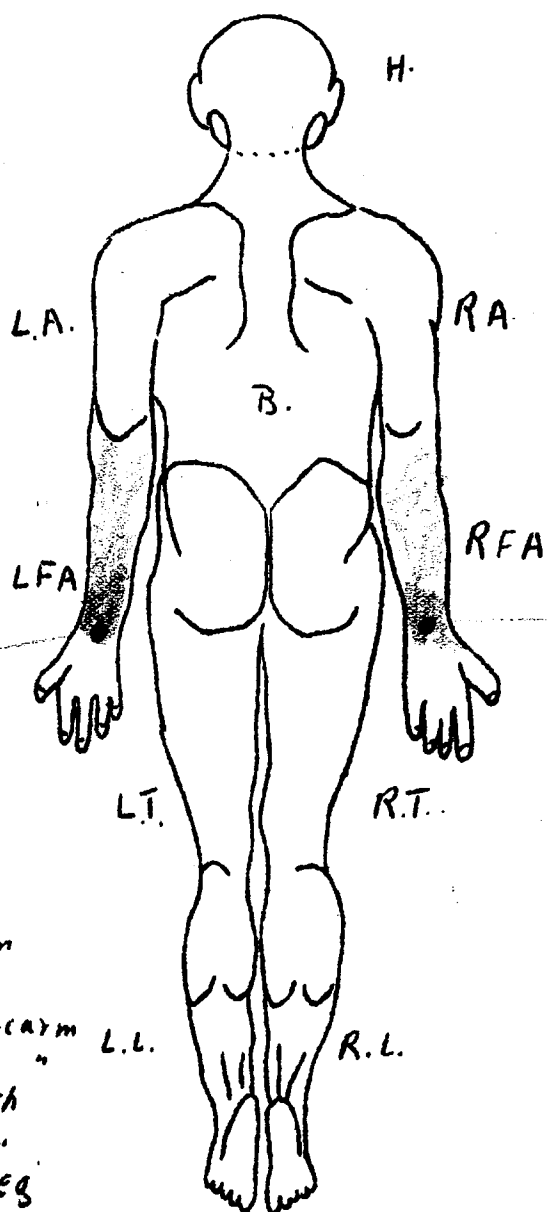
L.F.A. erythem. dermatitis front and back especially above wrist. 1 warty nodule behind left wrist.

Group. 3.

Front.



Back.



H. Head
 F. Face.
 CH. Chest.
 B. Back.
 A. Abdomen
 R.A. Right Arm
 L.A. Left "
 R.F.A. Right Forearm
 L.F.A. Left " "
 R.T. Right Thigh
 L.T. Left " "
 R.L. Right Leg
 L.L. Left leg.

<u>Name.</u>	<u>Age.</u>	<u>Occupation.</u>	<u>Length of Service.</u>
T.D. (O).	47 yrs	Paraffin sheds	10 yrs.

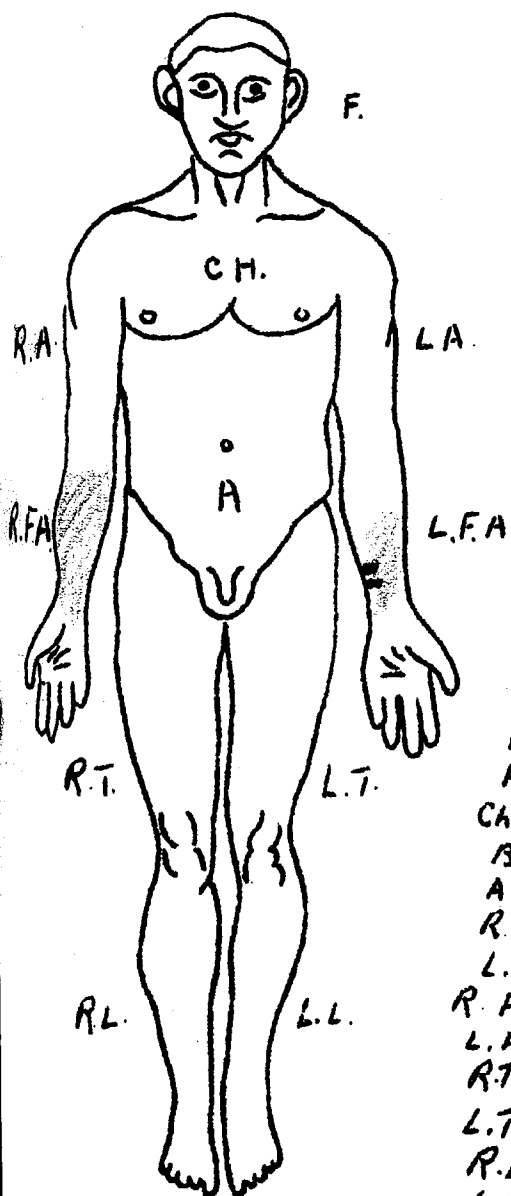
Description of Condition.

L.F.A. slight erythematous dermatitis over forearm above wrist. Two papules ulnar border.

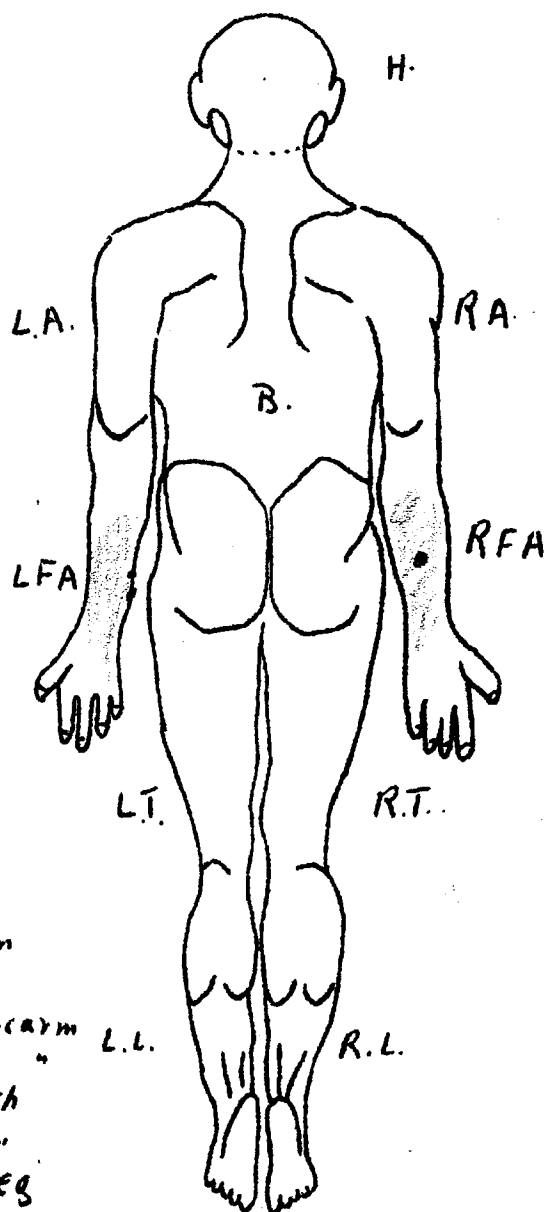
R.F.A. More extensive dermatitis over forearm, one papule forearm behind, about middle.

Group. 3.

Front.



Back.



H. Head
 F. Face.
 Ch. Chest.
 B. Back.
 A. Abdomen
 R.A. Right Arm
 L.A. Left "
 R.F.A. Right Forearm
 L.F.A. Left " "
 R.T. Right Thigh
 L.T. Left " "
 R.L. Right Leg
 L.L. Left leg.

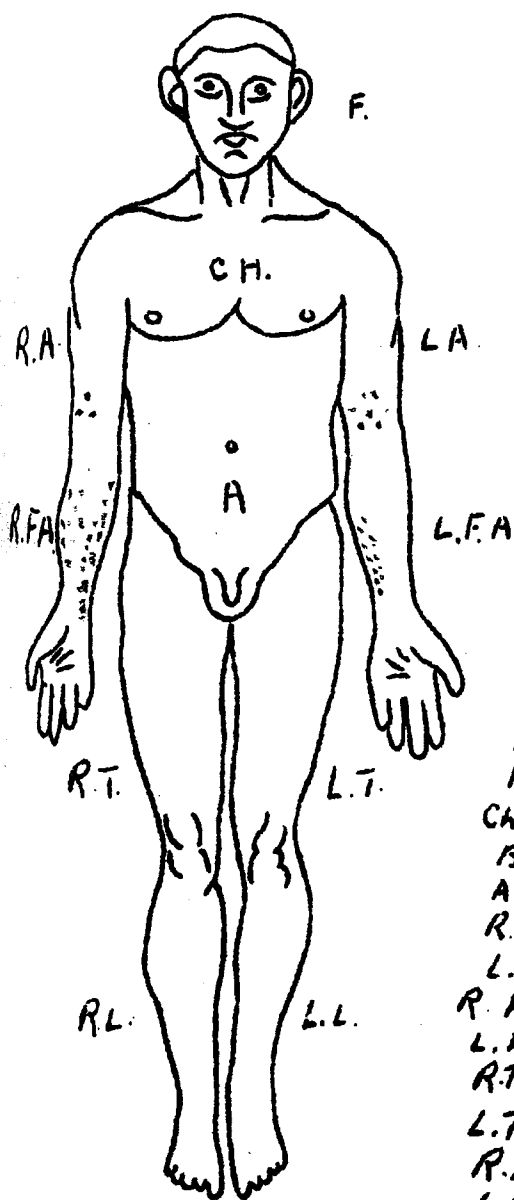
<u>Name.</u>	<u>Age.</u>	<u>Occupation.</u>	<u>Length of Service.</u>
J. McG. (O).	35 yrs.	Paraffin sheds	3½ yrs.

Description of Condition.

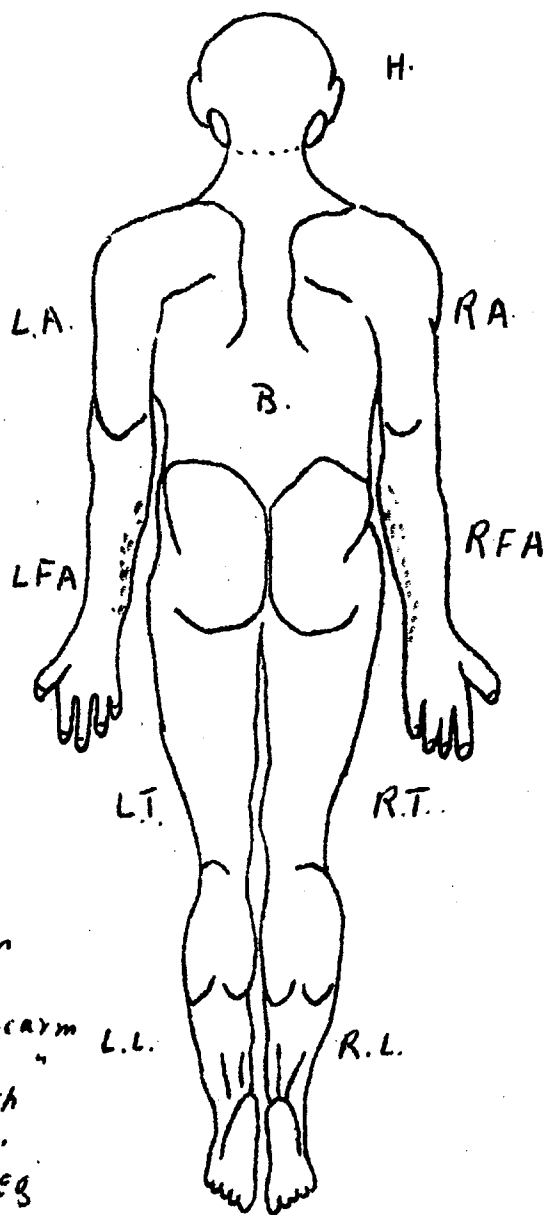
R.A. 3 small papules above elbow, anteriorly.
 L.A. A few small papules above elbow, anteriorly.
 R.F.A. Some papules ulnar border, small papules anterior surface, towards outer border.
 L.F.A. A few papules ulnar aspect.

Group. 3.

Front.



Back.



H. Head
 F. Face.
 CH. Chest.
 B. Back.
 A. Abdomen
 R.A. Right Arm
 L.A. Left "
 R.F.A. Right Forearm
 L.F.A. Left " "
 R.T. Right Thigh
 L.T. Left " "
 R.L. Right Leg
 L.L. Left leg.

name.

Age.

Occupation.

Length of Service

David Roseburgh (D) 30 years.

Greensheds.

8½ years.

Description of Condition.

In addition to description as at /5/3/21 viz.
neck -acne.

R.F.A. L.F.A. papular dermatitis ulnar borders.

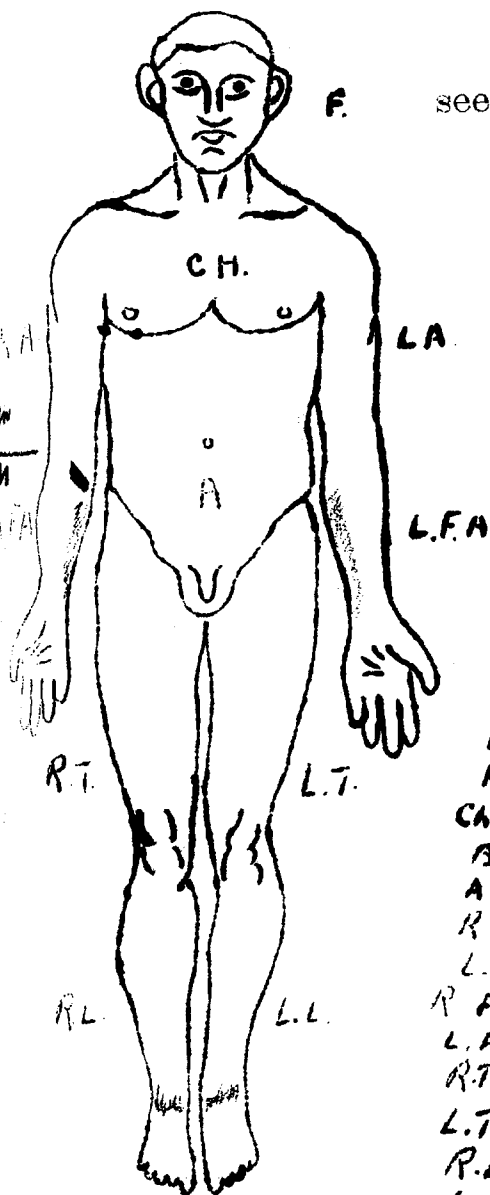
R.L. & L.L. slight papular dermatitis round ankles.

On June 1st 1921 a scar, to inner side of bend of elbow, result of an incision. This was not present on 15/3/21.

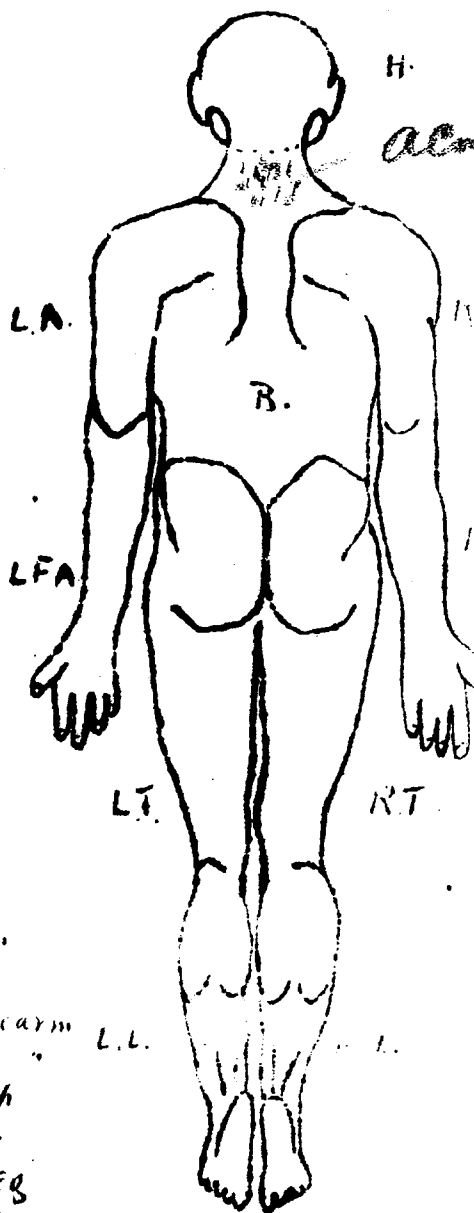
Front.

3

Back.

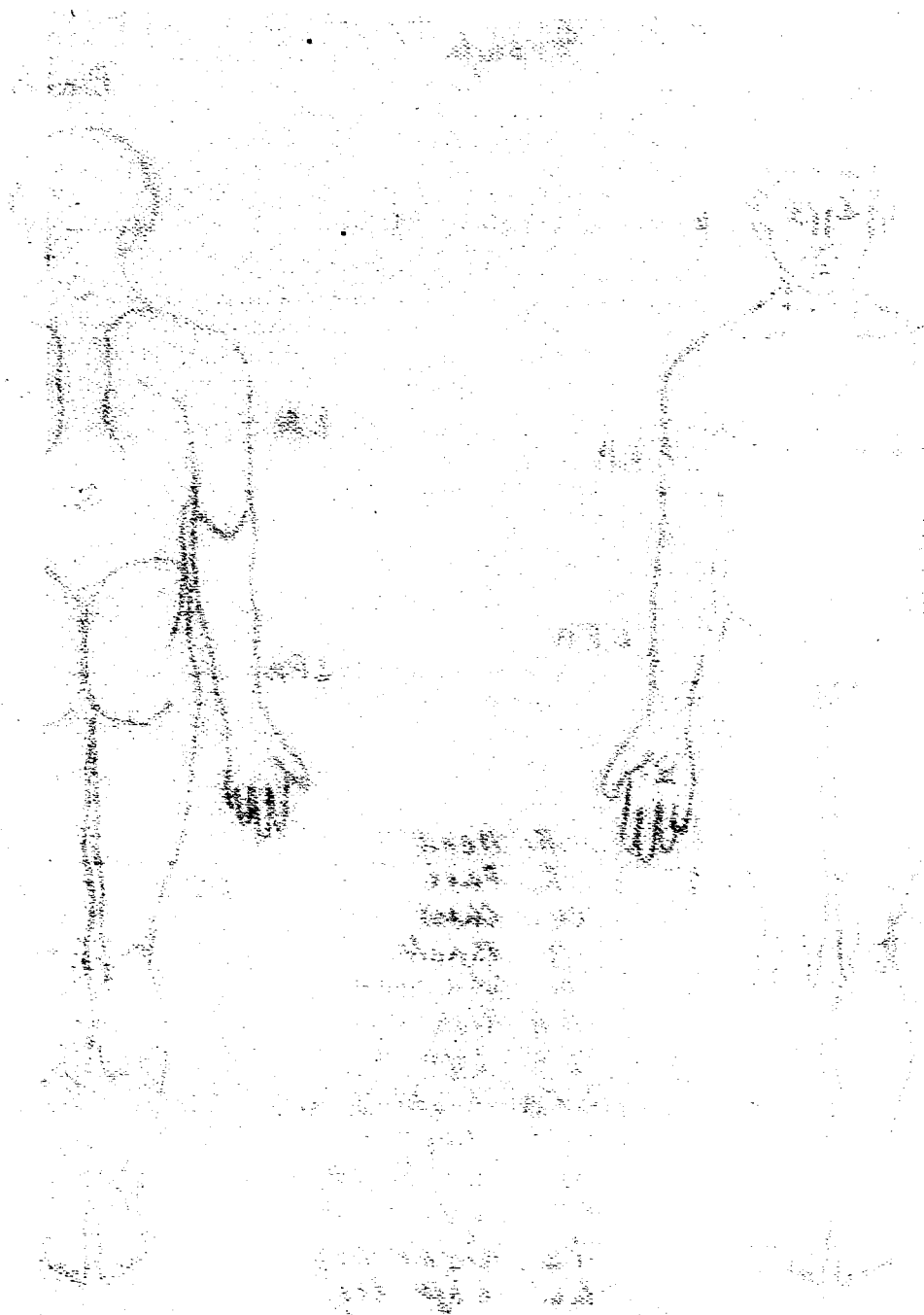


see other side.



- H. Head
- F. Face.
- CH. Chest.
- B. Back.
- A Abdomen
- R.A Right Arm
- L.A Left "
- R.F.A Right Forearm
- L.F.A Left "
- R.T. Right Thigh
- L.T. Left "
- R.L. Right Leg
- L.L. Left leg.

was off work from 19th April till 24th May after operation , but on 15/3/21 no condition was noticeable requiring any treatment, a growth is said to have begun in April requiring excision, but I am certain that it could not have been a paraffin workers condition, as he was examined on 15/3/21 and nothing was seen.



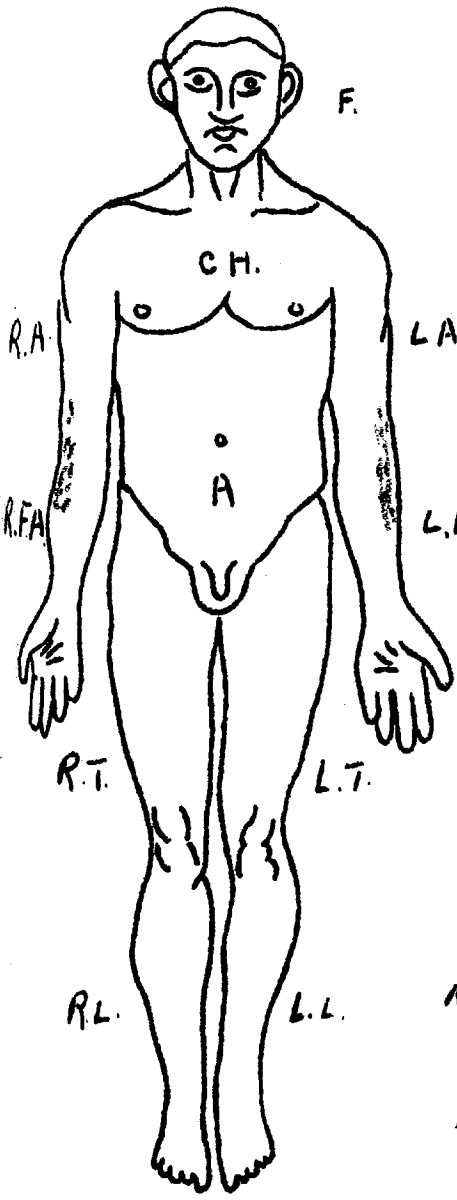
<u>Name.</u>	<u>Age.</u>	<u>Occupation.</u>	<u>Length of Service.</u>
R.O. (O)	33 yrs	Paraffin sheds	4½ yrs.

Description of Condition.

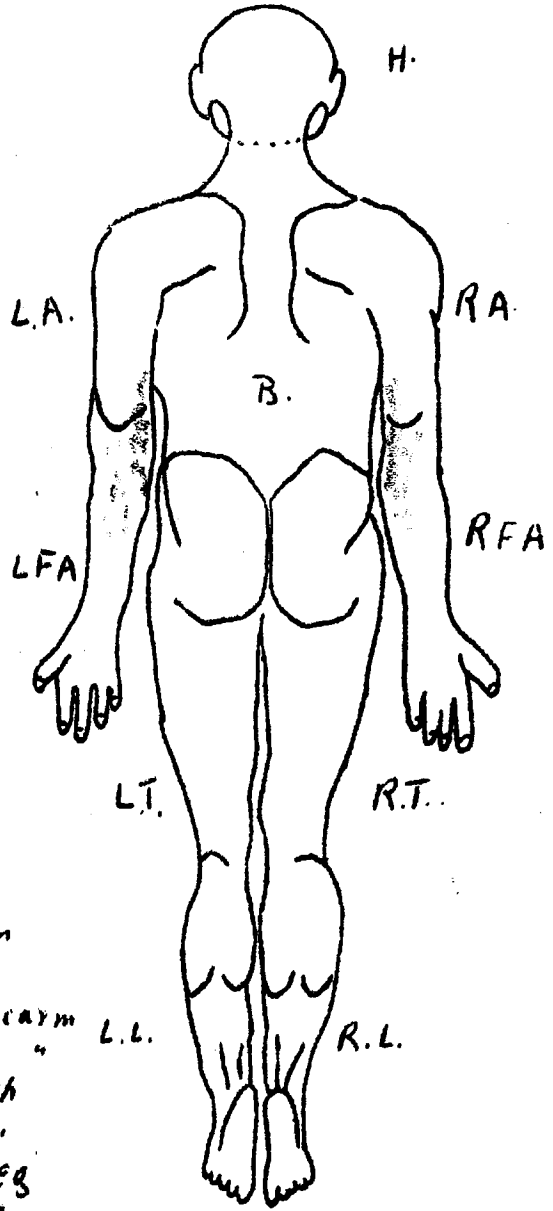
R.A. and L.A. Slight papular dermatitis
outer aspects both arms in region of elbows.

Group. 3.

Front.



Back.



- H. Head
- F. Face.
- CH. Chest.
- B. Back.
- A. Abdomen
- R.A. Right arm
- L.A. Left "
- R.FA. Right Forearm
- L.FA. Left " "
- R.T. Right Thigh
- L.T. Left " "
- R.L. Right Leg
- L.L. Left leg.

Name. Age. Occupation. Length of Service.

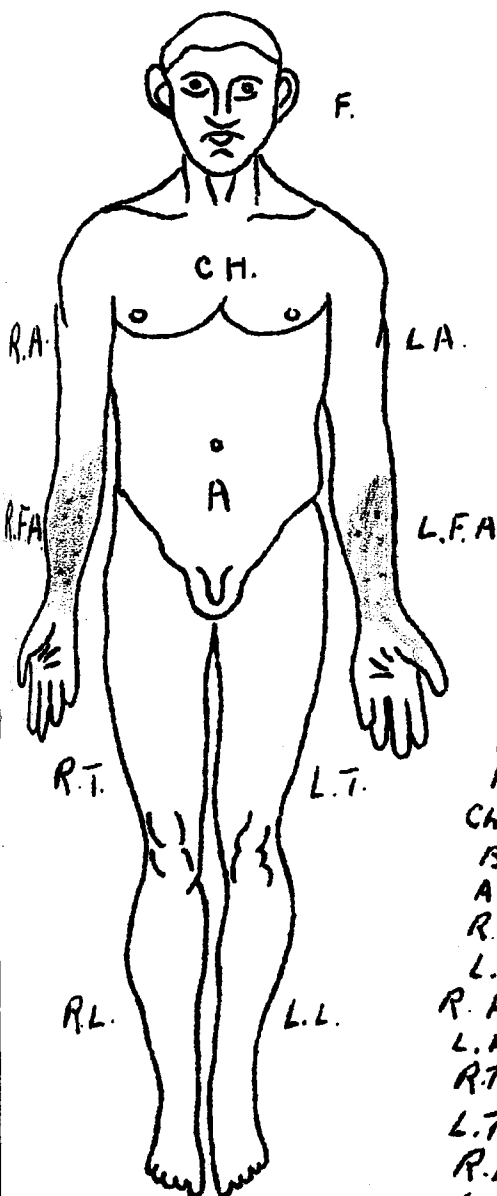
J. McK. (O). 55 yrs Refinery (Sweating sheds) 15 yrs.

Description of Condition.

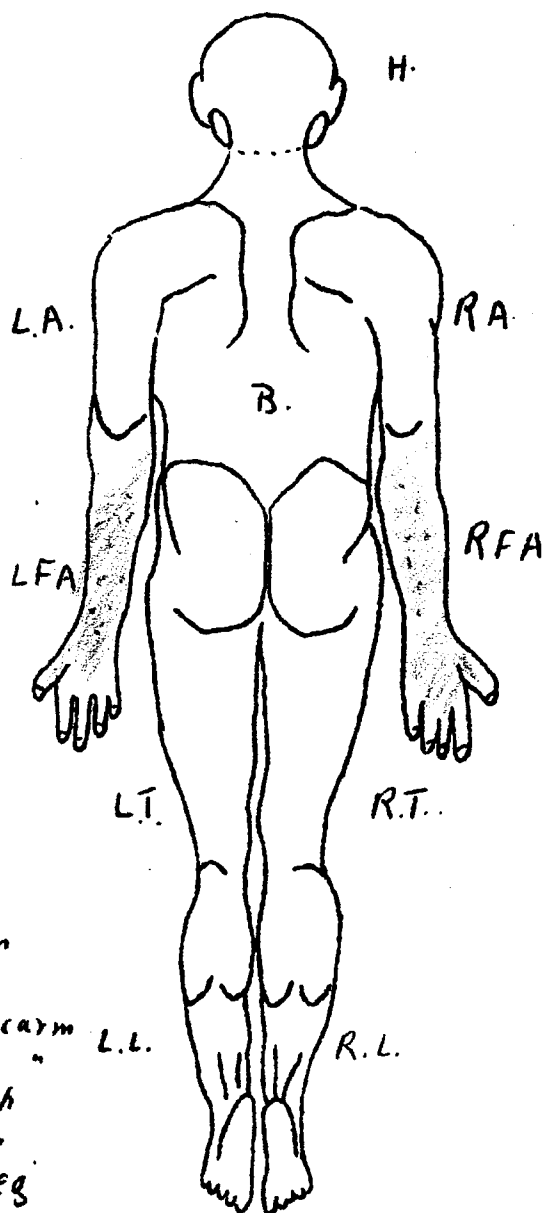
R.F.A. and L.F.A. erythematous dermatitis back and front, and also dorsal surfaces of both hands. a few tiny papules on forearms.

Group. 3.

Front.



Back.



- H. Head
- F. Face
- CH. Chest
- B. Back
- A. Abdomen
- R.A. Right Arm
- L.A. Left "
- R.F.A. Right Forearm
- L.F.A. Left " "
- R.T. Right Thigh
- L.T. Left " "
- R.L. Right Leg
- L.L. Left leg

Name. John Motion, (O) Age. 26 yrs Occupation Greensheds. Length of Service. 1 1/2 years.

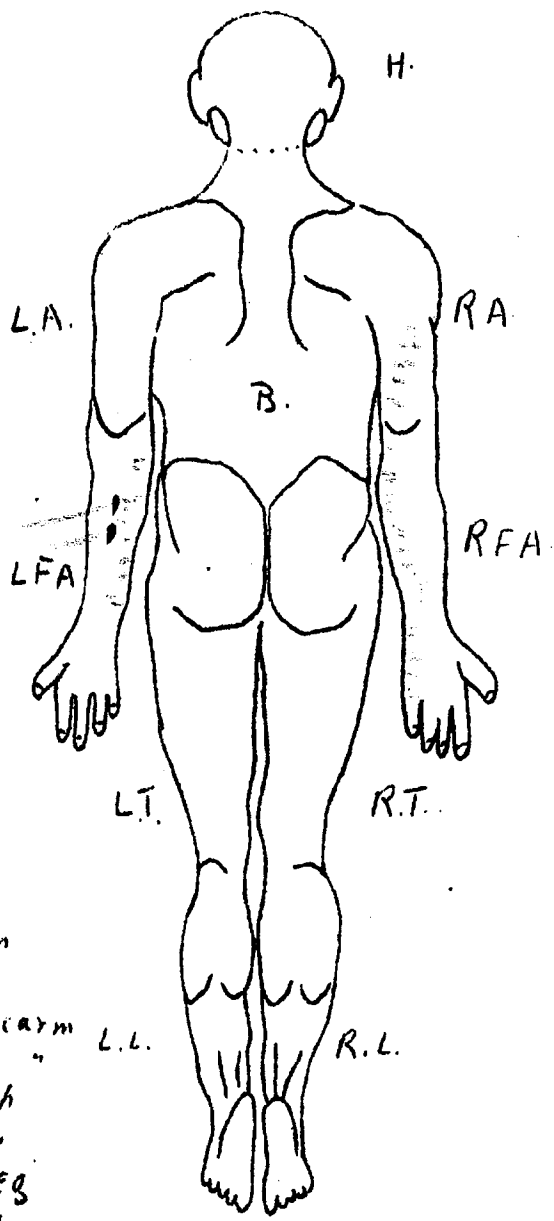
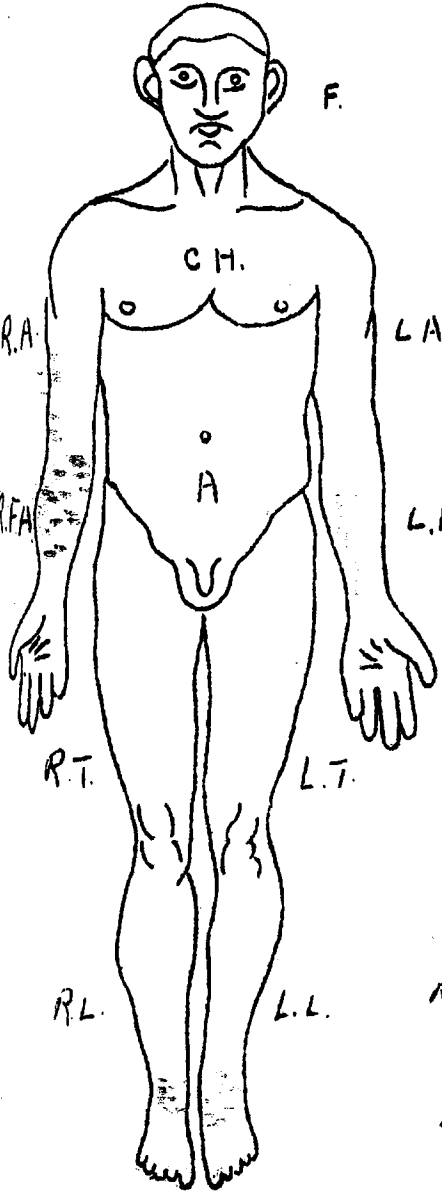
Description of Condition. R.F.A. papular dermatitis ulnar side 2 large papules 3" above ulnar side of wrist. papules on anterior aspect also.
L.F.A. papular dermatitis ulnar side. 2 large papules below elbow behind.
R.A. & L.A. some papular dermatitis above elbow.
R.L. & L.L. papular dermatitis round ankles.

Group.

Front.

Back.

3.



- H. Head
- F. Face
- CH. Chest
- B. Back
- A. Abdomen
- RA Right Arm
- LA Left "
- R.F.A. Right Forearm
- L.F.A. Left " "
- R.T. Right Thigh
- L.T. Left " "
- R.L. Right Leg
- L.L. Left leg.

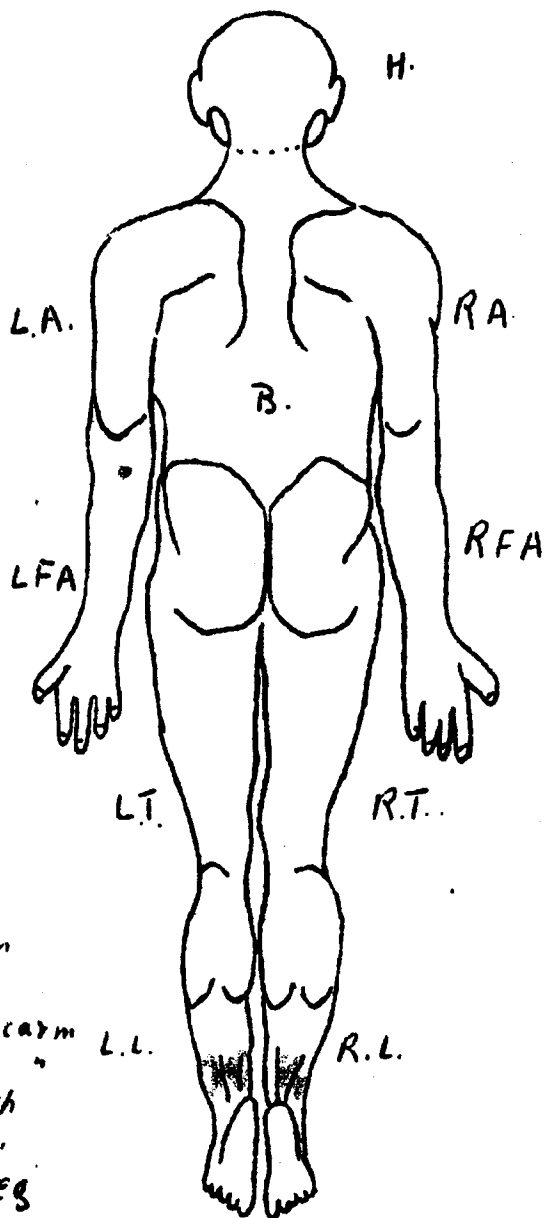
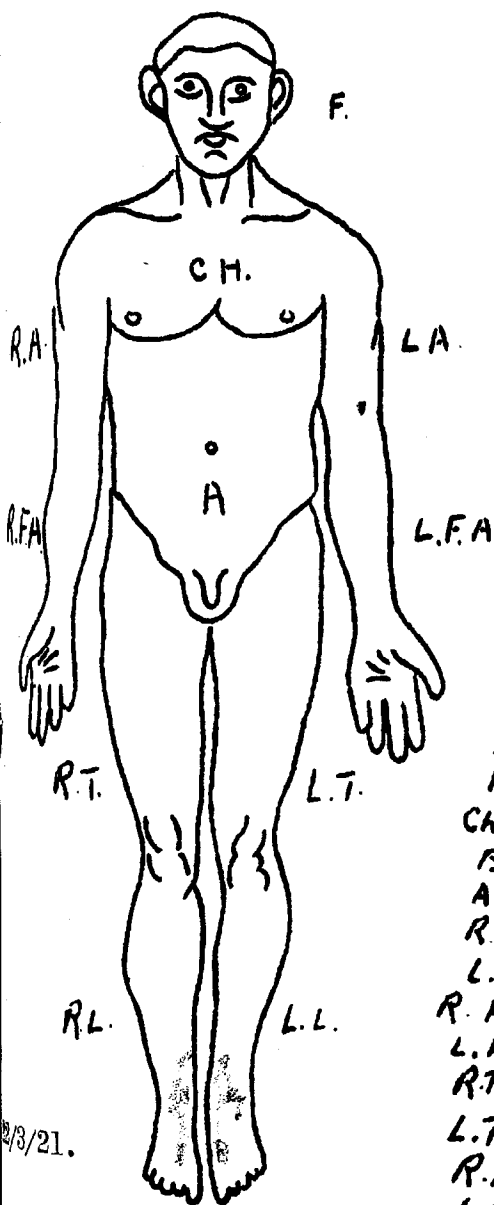
Name. Age. Occupation. Length of Service.
 William Robertson, (O) 25 years Greensheds. 1 1/2 years.

Description of Condition. L.A. One papule lower third anteriorly.
 one ditto below elbow, behind.
 R.F.A. Middle ~~pea~~ anterior aspect one papule.
 Head and neck acne. R.L. & L.L. Follicular & papular
 dermatitis lower thirds both legs, round ankles and over dorsi of
 feet and over extensor tendons.

Group.

Front.

Back.



H. Head
 F. Face.
 CH. Chest.
 B. Back.
 A. Abdomen
 R.A. Right Arm
 L.A. Left "
 R.F.A. Right Forearm
 L.F.A. Left " "
 R.T. Right Thigh
 L.T. Left " "
 R.L. Right Leg
 L.L. Left leg.

Name. Age. Occupation. Length of Service.

James Robertson. (O) 21 years. Greensheds.

1 year.

Description of Condition.

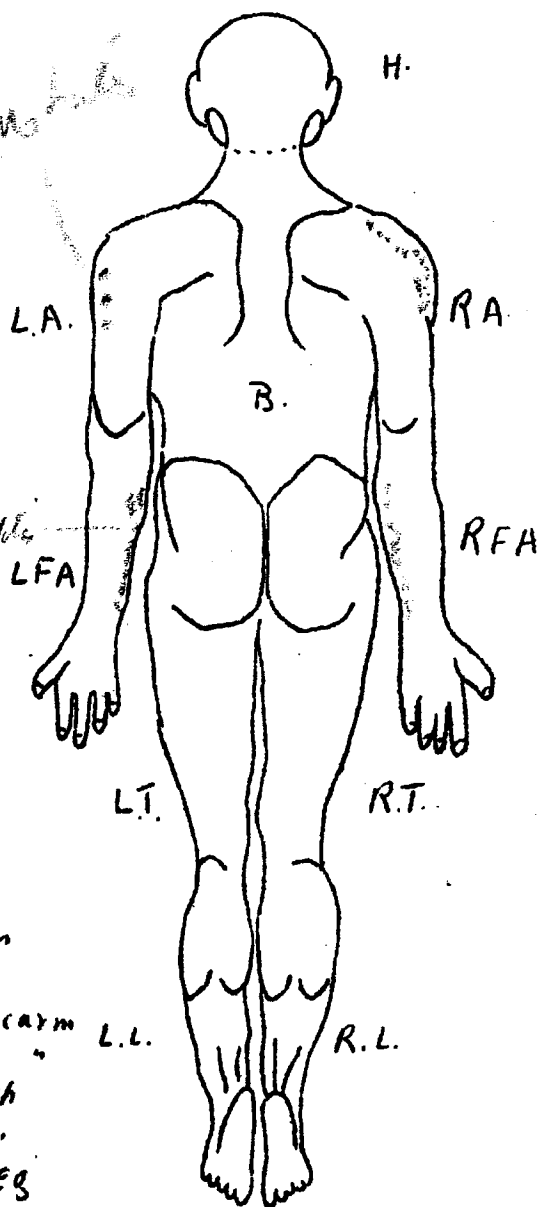
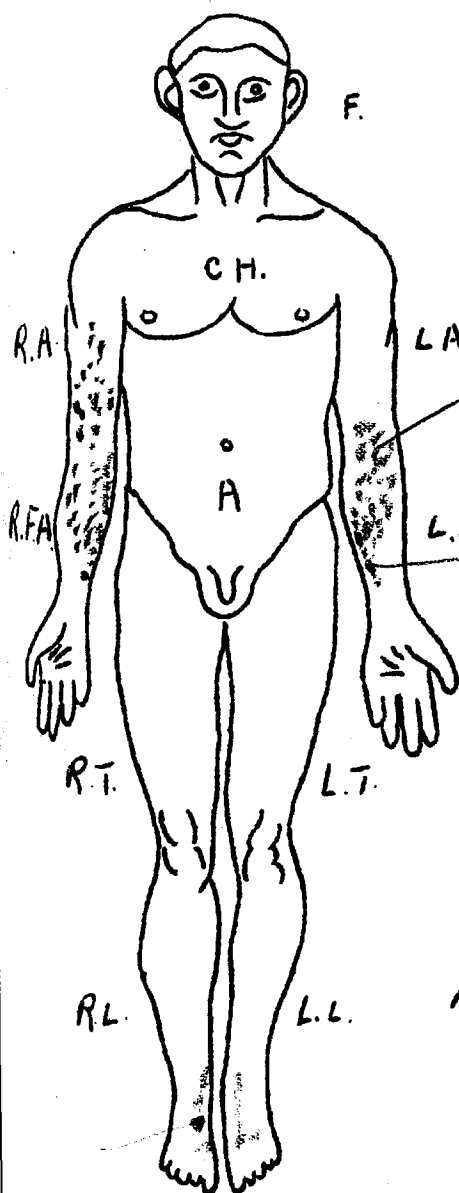
L.A. Papular dermatitis externally and on posterior aspect. Comedones. some pustules outer side. L.F.A. & L.F.A. comedones anterior aspects of elbows. a few papules middle of ulnar borders. legs. slight papular and follicular dermatitis of feet.

Group.

Front.

Back.

3.



- H. Head
- F. Face
- CH. Chest
- B. Back
- A. Abdomen
- R.A. Right Arm
- L.A. Left "
- R.F.A. Right Forearm
- L.F.A. Left "
- R.T. Right Thigh
- L.T. Left "
- R.L. Right Leg
- L.L. Left Leg

Name. Age. Occupation. Length of Service.

George Glencorse. (D) 56 years Greensheds. 1 year.

Description of Condition. R.A. papular and follicular dermatitis behind right shoulder and posterior aspect of right arm.

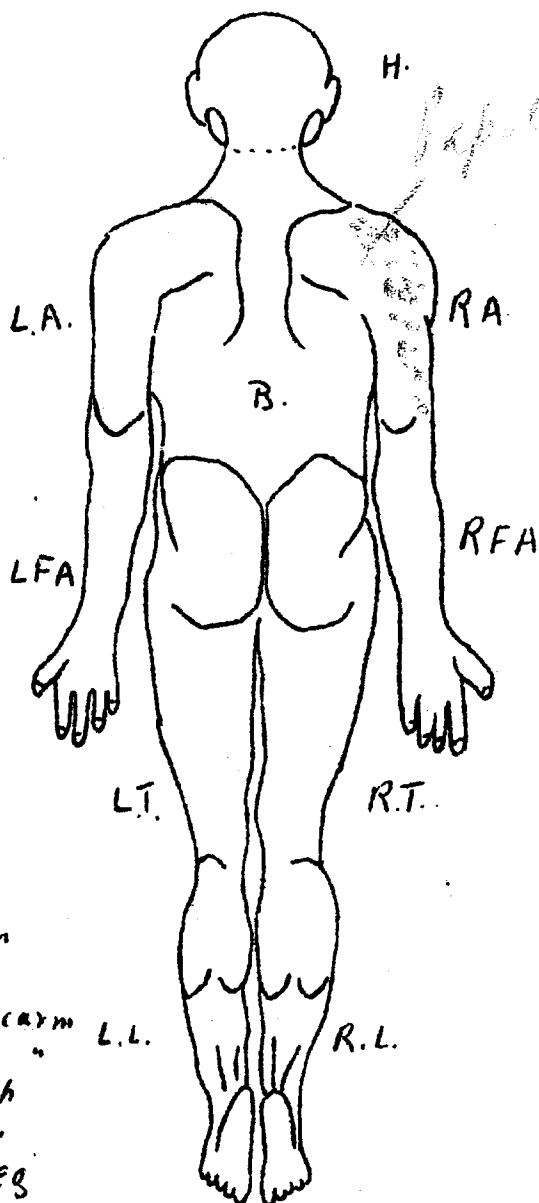
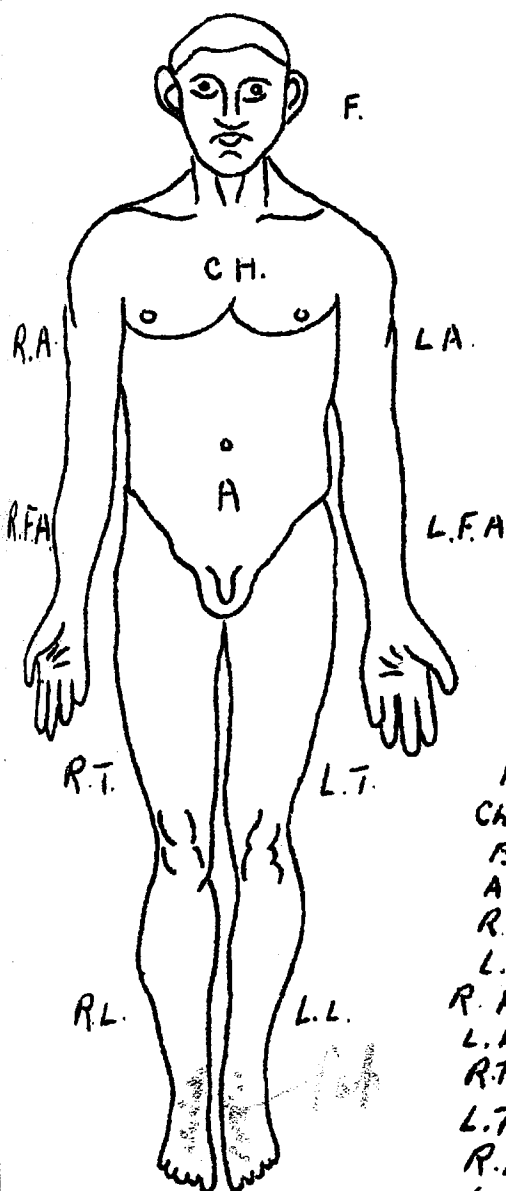
L. & L.L. Healed follicular dermatitis dorsii of feet and toes.
 1 papule in front of right ankle and also a few round both ankles.

Group.

Front.

Back.

3.



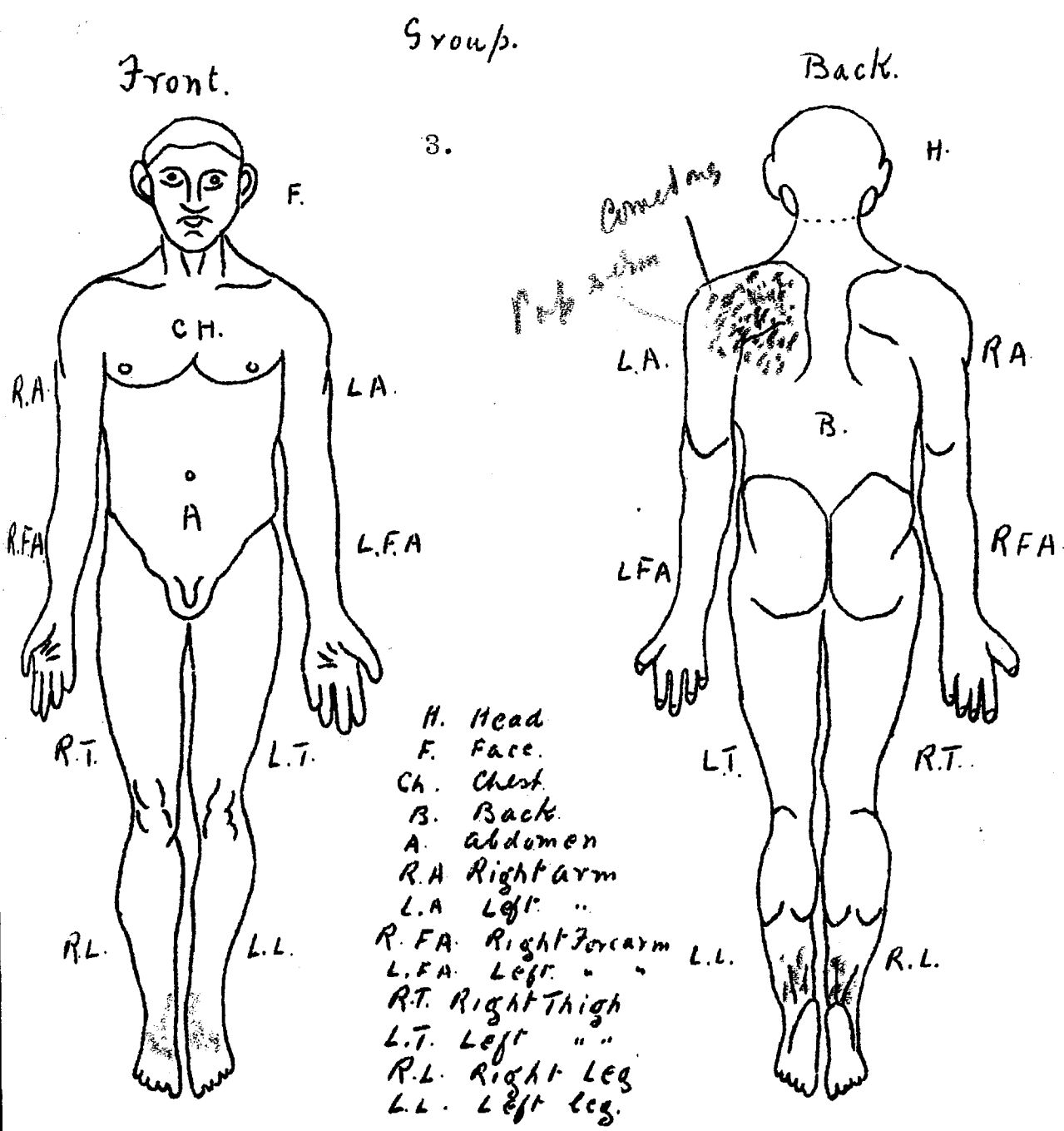
H. Head
 F. Face.
 Ch. Chest.
 B. Back.
 A. Abdomen
 R.A. Right Arm
 L.A. Left "
 R.F.A. Right Forearm
 L.F.A. Left "
 R.T. Right Thigh
 L.T. Left "
 R.L. Right Leg
 L.L. Left leg.

Name. Age. Occupation. Length of Service.

Edwardson (O) 44 years. Greensheds. 1 year.

Description of Condition. L.A. pustular dermatitis and comedones behind left shoulder.

L. & L.L. papular dermatitis round ankles and lower third legs.



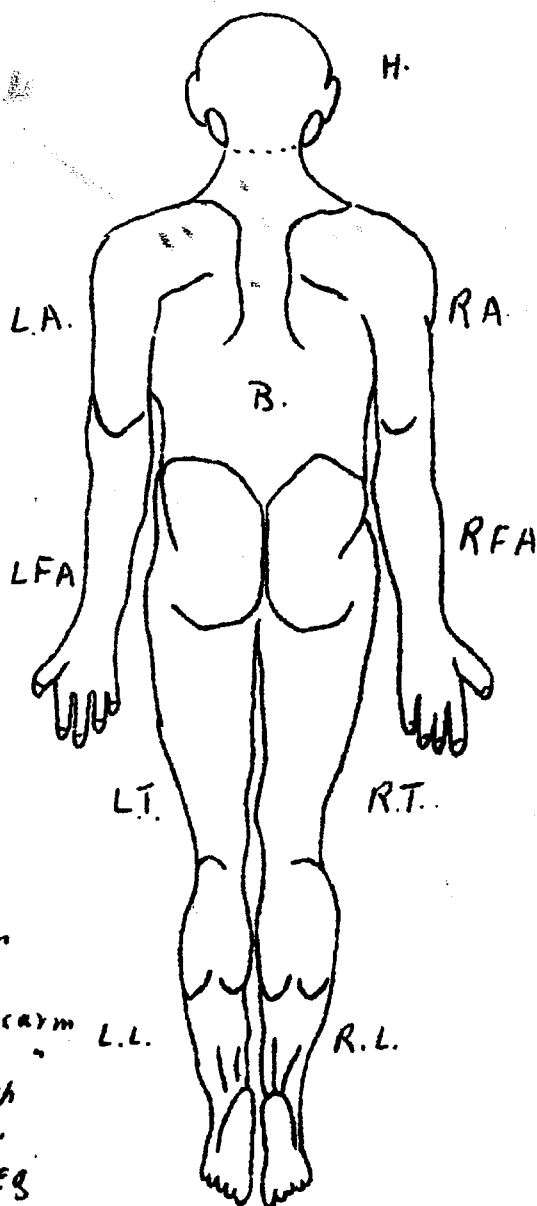
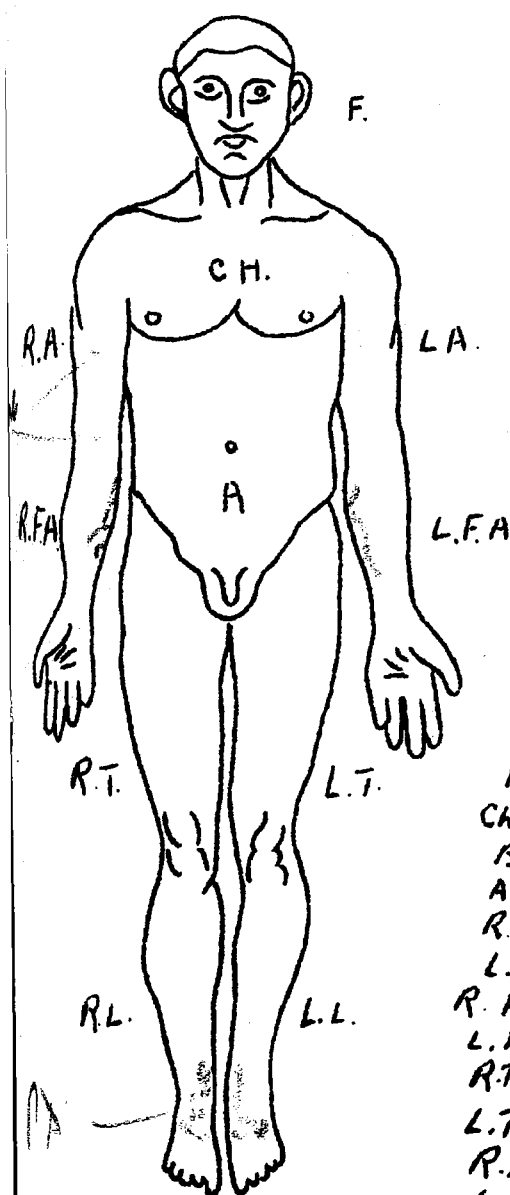
Name. Age. Occupation. Length of Service.
 Mos Peffers.(0) 31 years. Greensheds. 1 year.

Description of Condition. R.F.A. papular dermatitis ulnar side. 2 acne
 pustules above right elbow in front.
 L.F.A. healed papular dermatitis ulnar and anterior
 aspects.
 L.L. & L.L. Eryth. dermatitis and follicular dermatitis dorsi of feet
 and lower thirds of legs.

Group.

Front.

Back.



H. Head
 F. Face.
 CH. Chest.
 B. Back.
 A. Abdomen
 R.A. Right Arm
 L.A. Left "
 R.F.A. Right Forearm
 L.F.A. Left "
 R.T. Right Thigh
 L.T. Left "
 R.L. Right Leg
 L.L. Left leg.

Name. Andrew Curran . (O) Age. 36 yrs. Occupation. Greensheds Length of Service. 1 year.

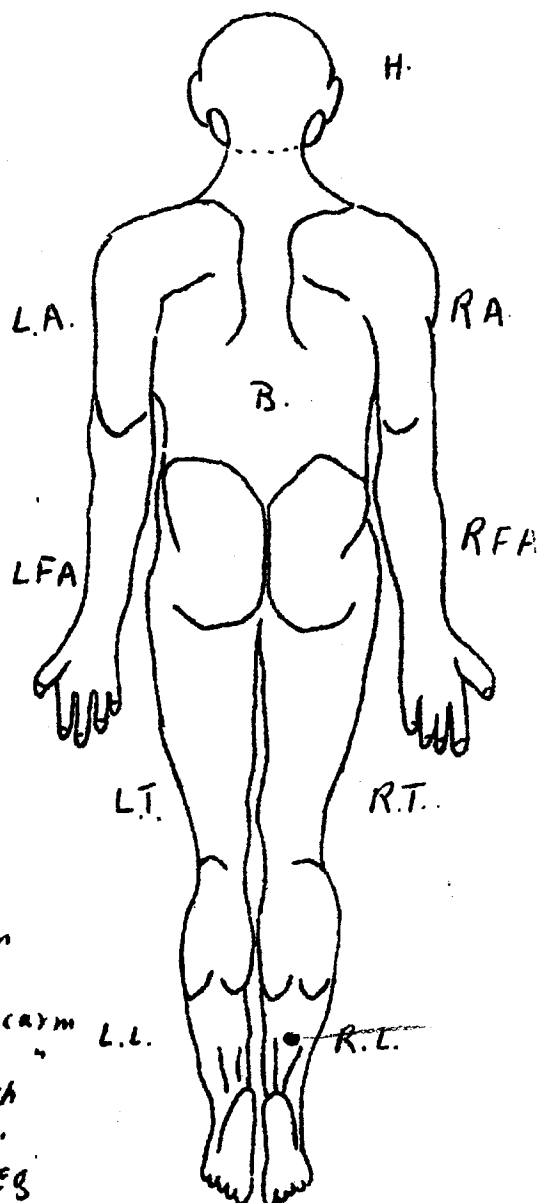
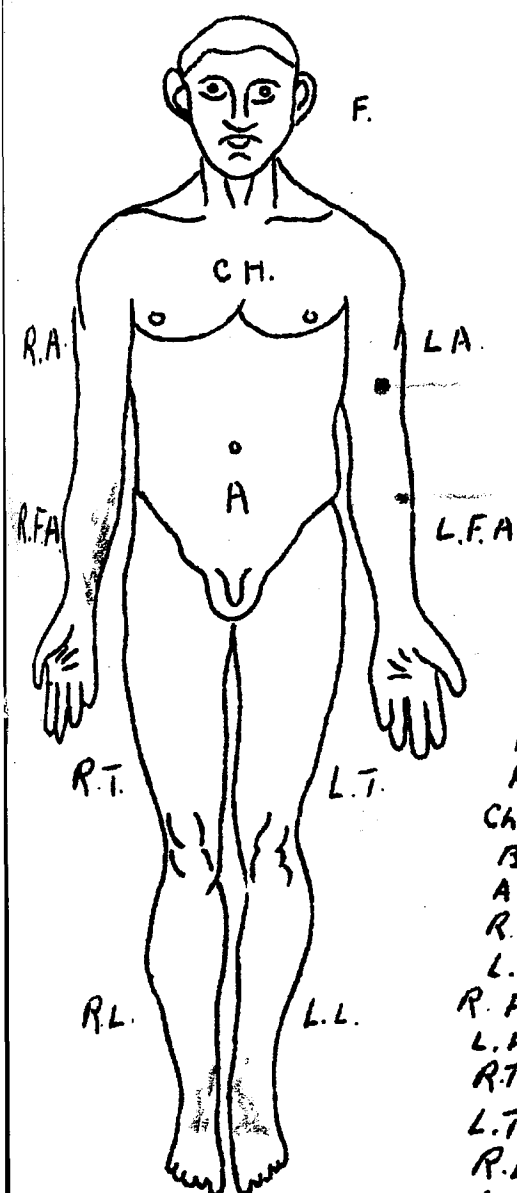
Description of Condition. R.F.A. a few papules ulnar side.
 L.A. one papule above elbow.
 L.F.A. one ditto below elbow in front.
 R.L. small papules dorsum of foot and 1 over back of ankle.
 LL. papular dermatitis dorsum of foot and outer side of ankle.

Group.

Front.

Back.

3.



H. Head
 F. Face.
 Ch. Chest.
 B. Back.
 A. Abdomen
 R.A. Right Arm
 L.A. Left "
 R.F.A. Right Forearm
 L.F.A. Left "
 R.T. Right Thigh
 L.T. Left "
 R.L. Right Leg
 L.L. Left leg.

Name. Age. Occupation. Length of Service.

Dignan (O) 22 years. Greenhsheds. 1 year.

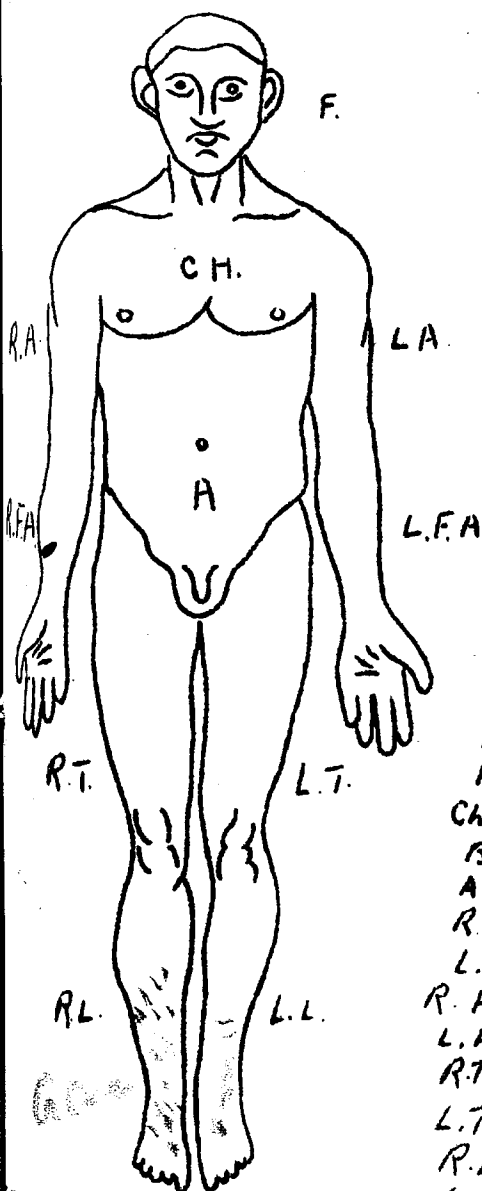
Description of Condition. R.F.A. I papule above wrist to outer side, in front L.L. acne, papular & eryth, dermatitis outer aspect of lower third.

R.L. eryth. dermatitis lower third, front & back. large acne pustules anteriorly and on dorsum of foot and above ankle.

acne, comedones. Shoulders. acne.

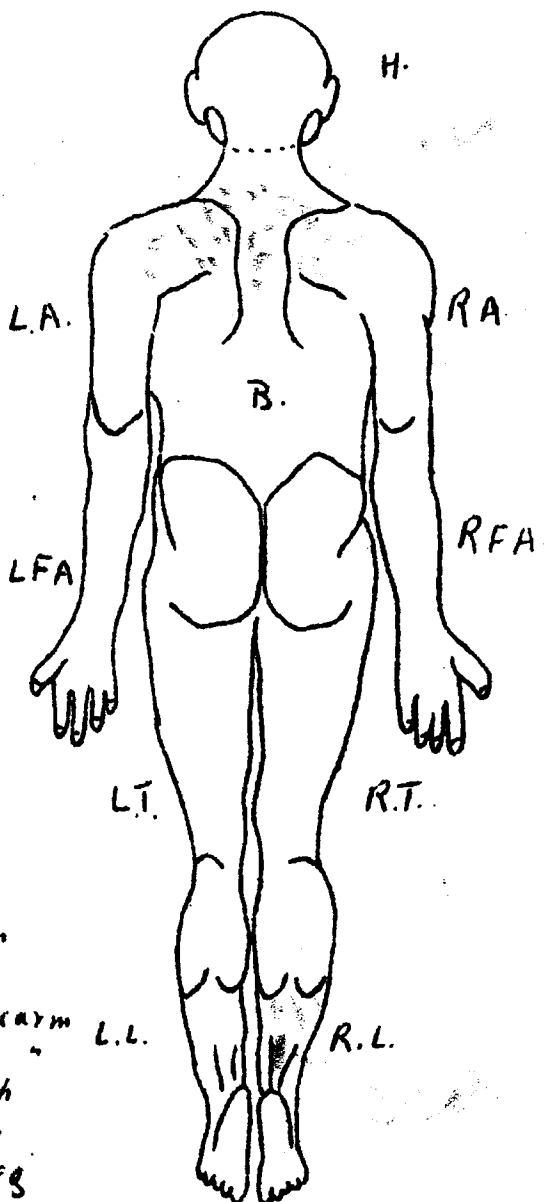
Group.

Front.



3.

Back.



H. Head
F. Face
CH. Chest
B. Back
A. Abdomen
R.A. Right Arm
L.A. Left "
R.F.A. Right Forearm
L.F.A. Left "
R.T. Right Thigh
L.T. Left "
R.L. Right Leg
L.L. Left leg

Name. Age. Occupation. Length of Service.

Murdoch Ross. (O) 30 yrs. Greensheds. 1 1/2 yrs.

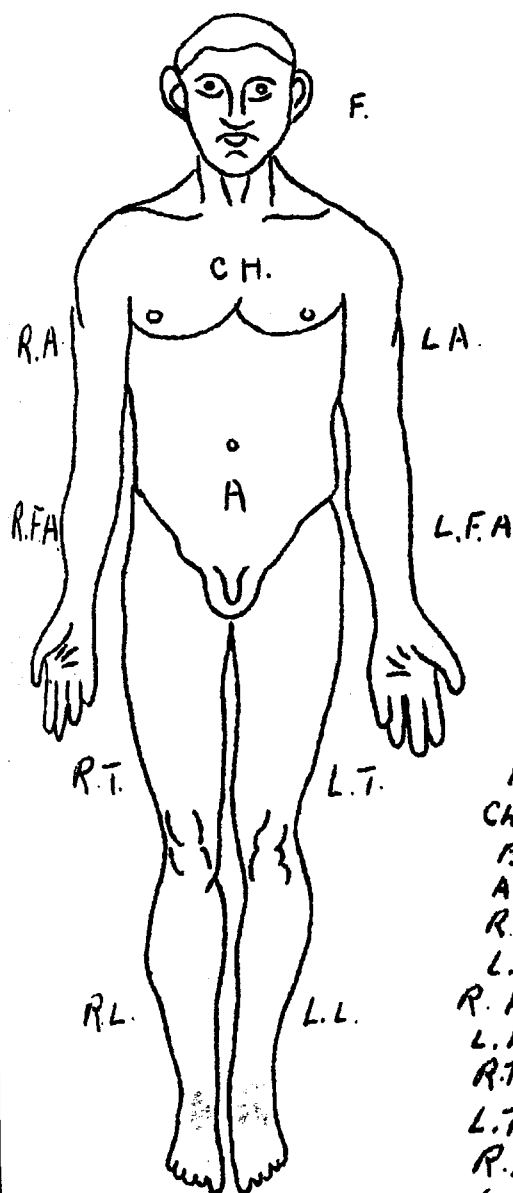
Description of Condition.

R.F.A. Papular dermatitis ulnar border above & below elbow. (a good many small papules.)
L.F.A. ditto, with two papules of larger size behind and below elbow.

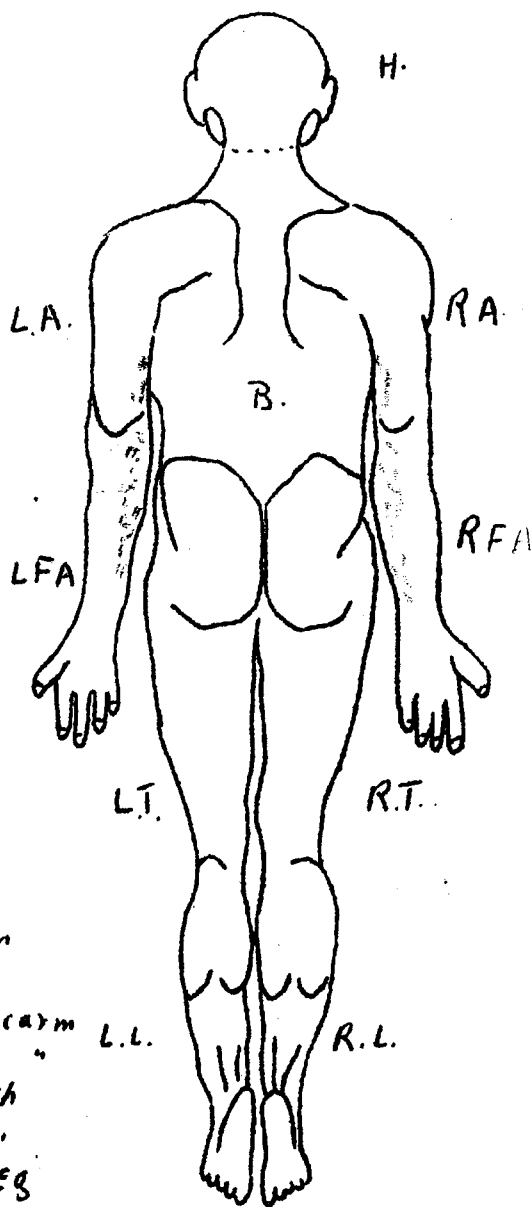
slight follicular dermatitis round ankles.

Group.

Front.



Back.



- 3.
- H. Head
 - F. Face
 - CH. Chest
 - B. Back
 - A. Abdomen
 - R.A. Right Arm
 - L.A. Left "
 - R.F.A. Right Forearm
 - L.F.A. Left "
 - R.T. Right Thigh
 - L.T. Left "
 - R.L. Right Leg
 - L.L. Left leg.

Name. Age. Occupation. Length of Service.

Robert MacKay. (C). 38 yrs

Greensheds.

3 yrs.

Description of Condition.

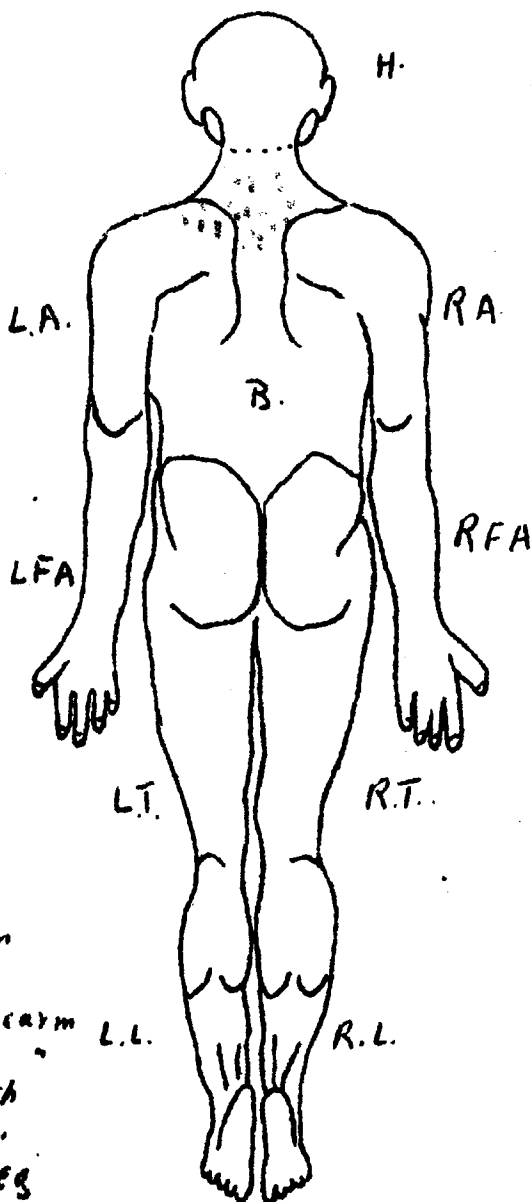
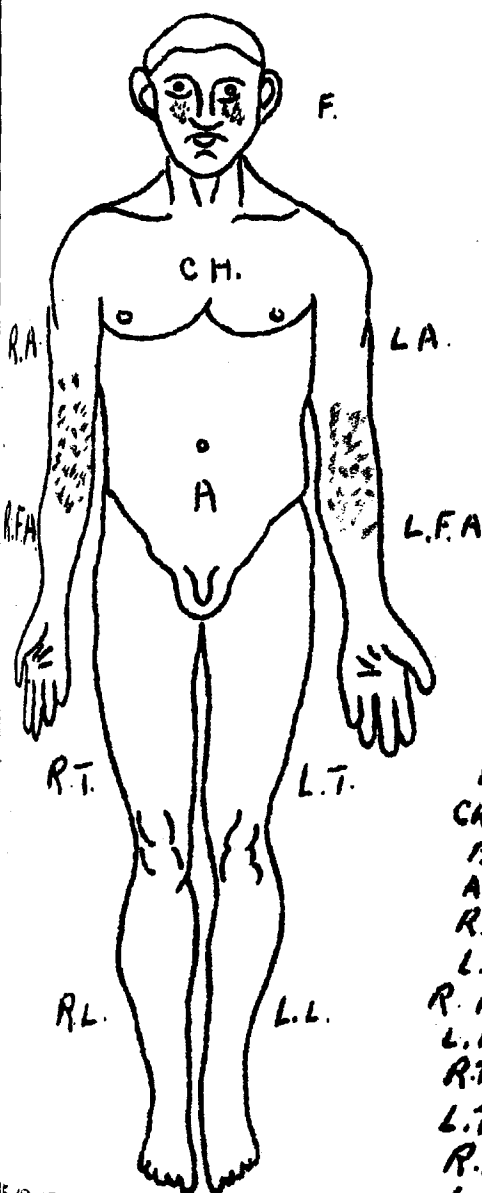
comedones and acne under eyes.
slight papular dermatitis both shoulders behind.
comedones and acne anterior aspects of both elbows
with a few small papules.

Group.

Front.

Back.

3



- H. Head
F. Face.
Ch. Chest.
B. Back.
A. Abdomen
R.A. Right arm
L.A. Left "
R.F.A. Right Forearm
L.F.A. Left "
R.T. Right Thigh
L.T. Left "
R.L. Right Leg
L.L. Left leg.

Name. Age. Occupation. Length of Service.

James Brand (0). 52 years

Greensheds,

1 1/2 year.

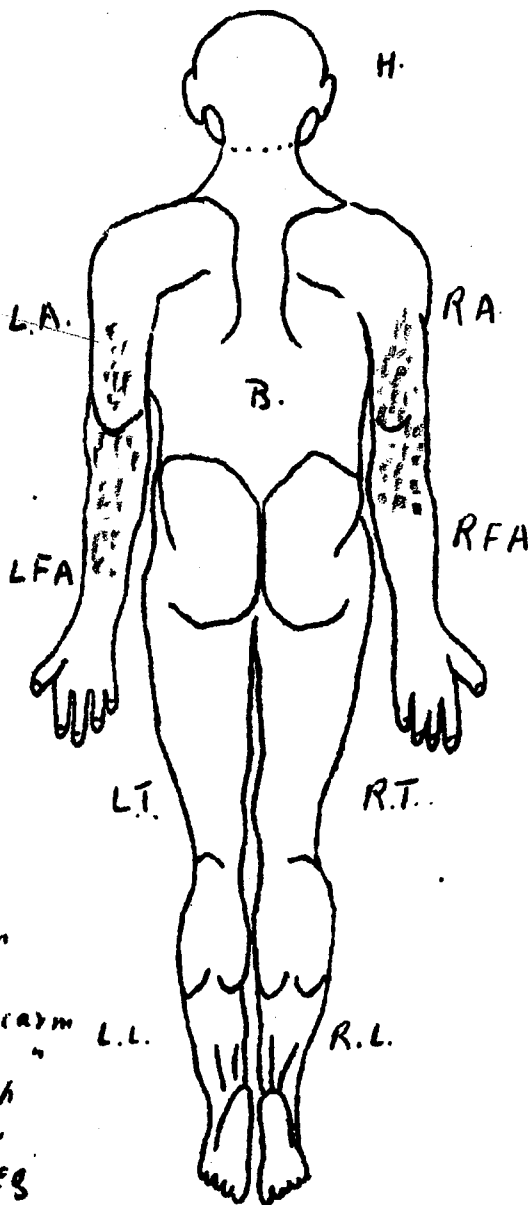
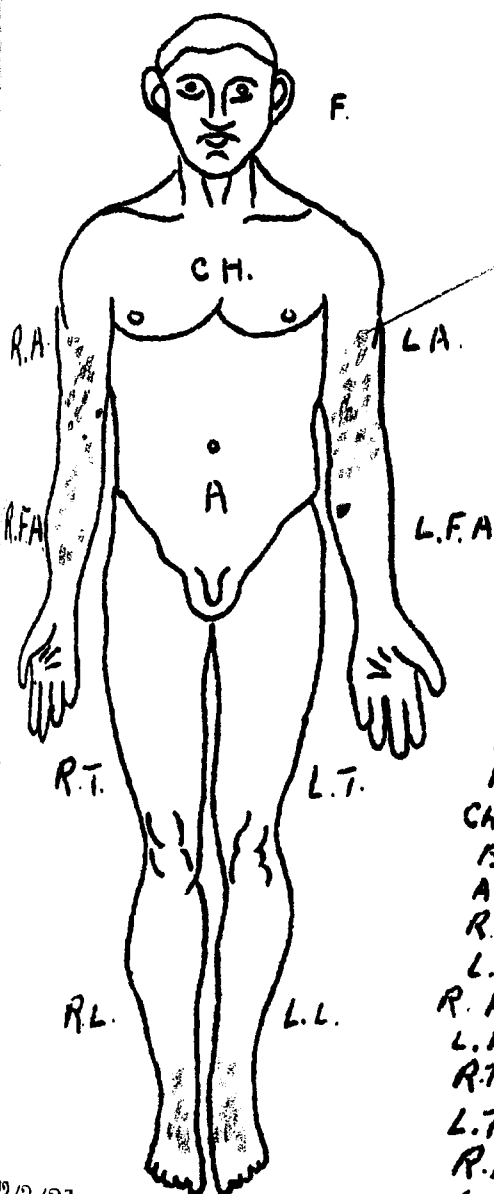
Description of R.A. & L.A. acne and comedones front and back over lower thirds.
 Condition. R.F.A. acne vulgaris and comedones front & back, a few papules anteriorly.
 R.F.A. acne and comedones front and back, 2 pustules middle of ulnar aspect.
 R.L. & L.L. follicular & papular dermatitis lower thirds also dorsi of feet and over extensor tendons.

Group.

Front.

3.

Back.



H. Head
 F. Face.
 CH. Chest.
 B. Back.
 A. Abdomen
 R.A. Right Arm
 L.A. Left "
 R.F.A. Right Forearm
 L.F.A. Left " "
 R.T. Right Thigh
 L.T. Left " "
 R.L. Right Leg
 L.L. Left leg.

Name. Age. Occupation. Length of Service.

A. Mc R. (O). 65 yrs Paraffin Sheds 20 yrs.

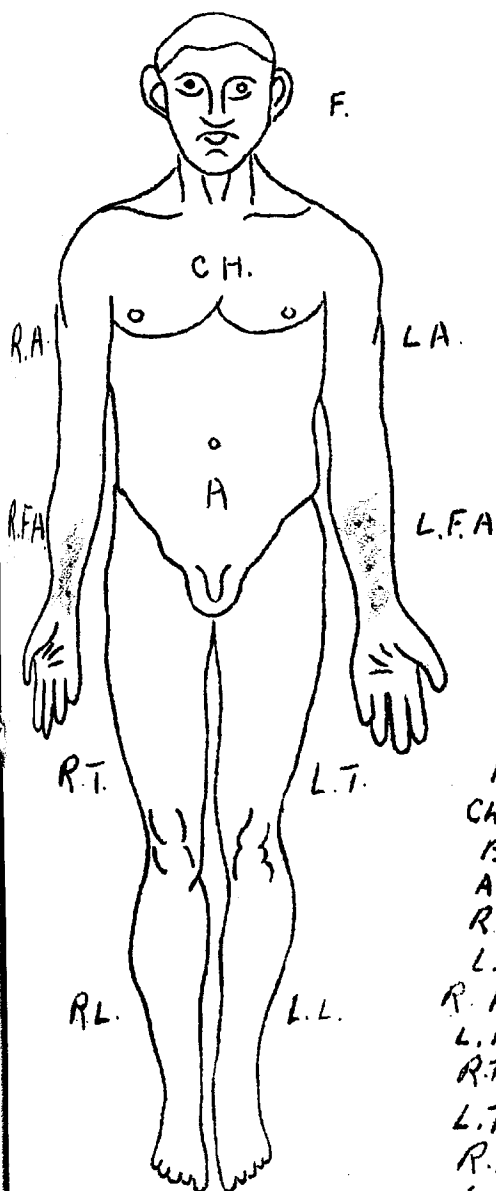
Description of Condition.

R.F.A. and L.F.A. erythematous dermatitis backs of hands and lower half of each forearm, anteriorly and posteriorly.

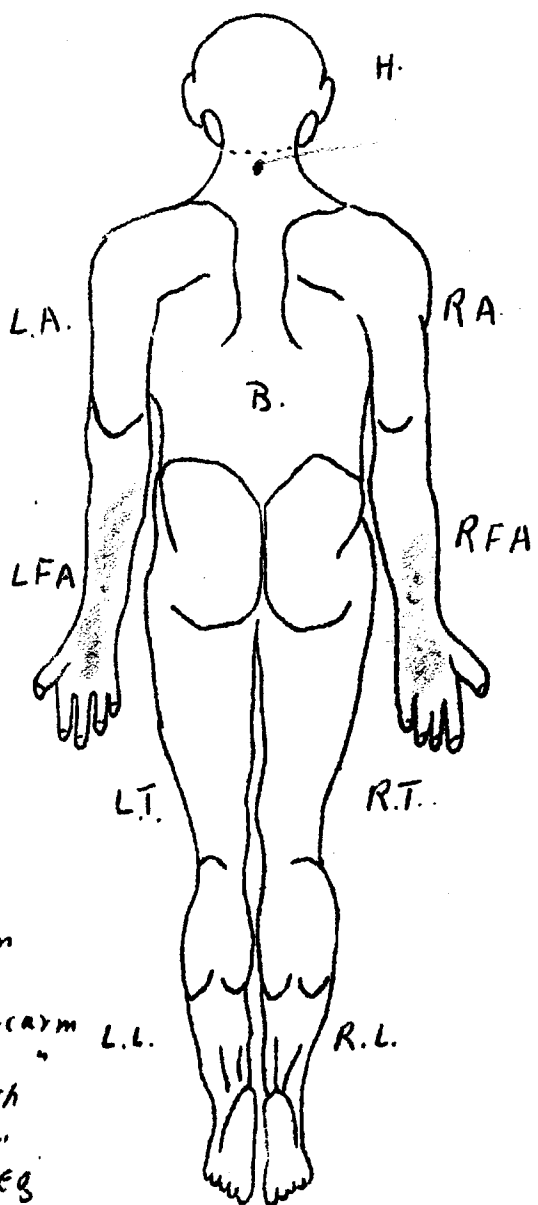
H. 1 papule back of neck.

Group. 3

Front.



Back.



- H. Head
- F. Face.
- CH. Chest.
- B. Back.
- A. Abdomen
- R.A. Right Arm
- L.A. Left "
- R.F.A. Right Forearm
- L.F.A. Left " "
- R.T. Right Thigh
- L.T. Left " "
- R.L. Right Leg
- L.L. Left leg.

Name. Age. Occupation. Length of Service.
 P.G. (U). 24 years Refinery (Sweating sheds 4 months.

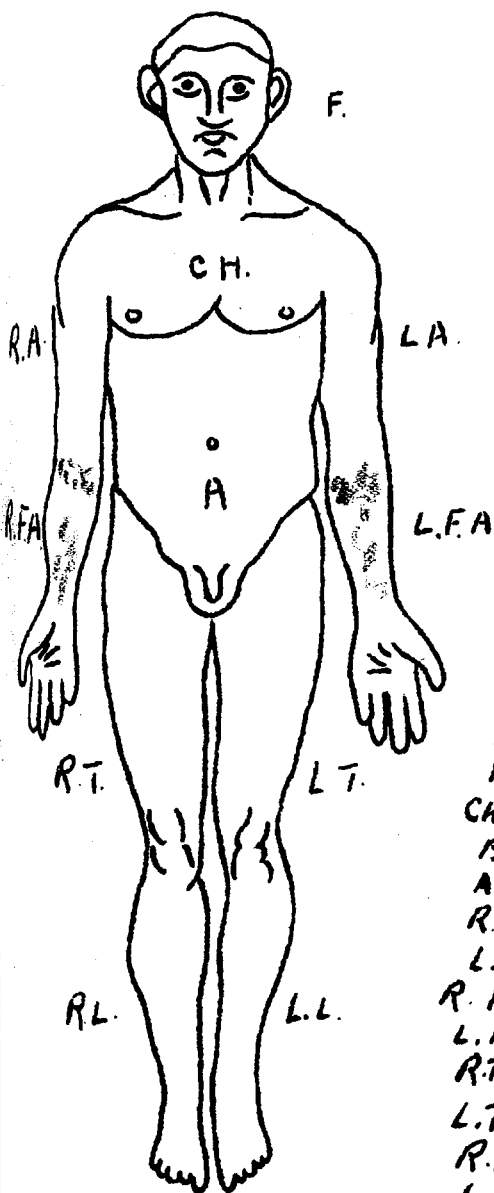
Description of Condition.

R.A. and L.A. Pustular and papular dermatitis around elbows, worse on posterior surface.

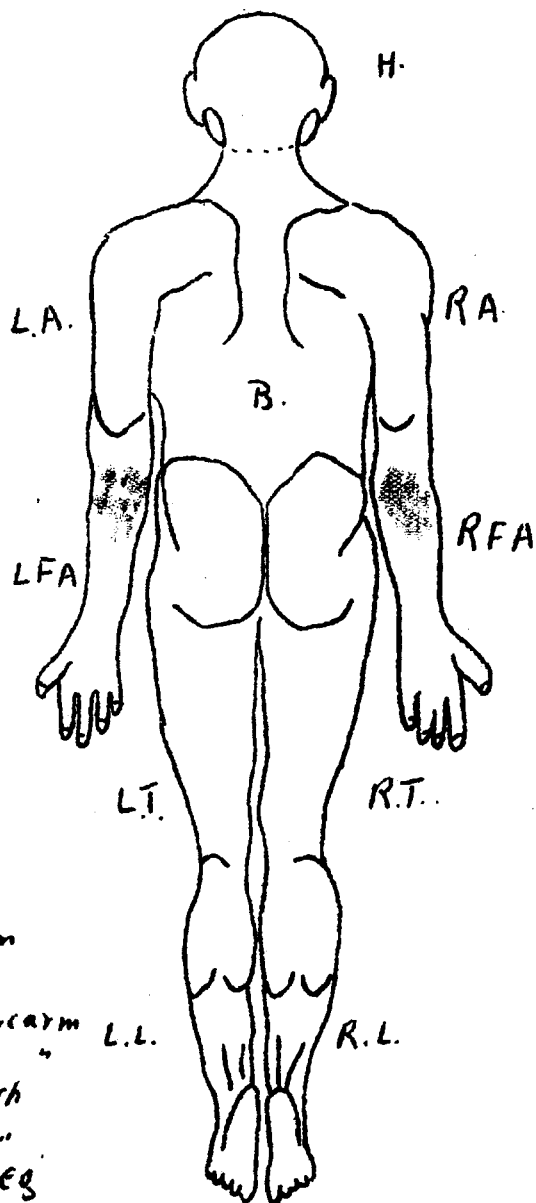
R.F.A. and L.F.A. a few papules anterior aspects.

Group. III.

Front.



Back.



- H. Head
- F. Face
- CH. Chest
- B. Back
- A. Abdomen
- R.A. Right Arm
- L.A. Left "
- R.F.A. Right Forearm
- L.F.A. Left " "
- R.T. Right Thigh
- L.T. Left " "
- R.L. Right Leg
- L.L. Left leg

Name. Age. Occupation. Length of Service.
 W.S. (U). 29 yrs. Paraffin sheds. 1 year.

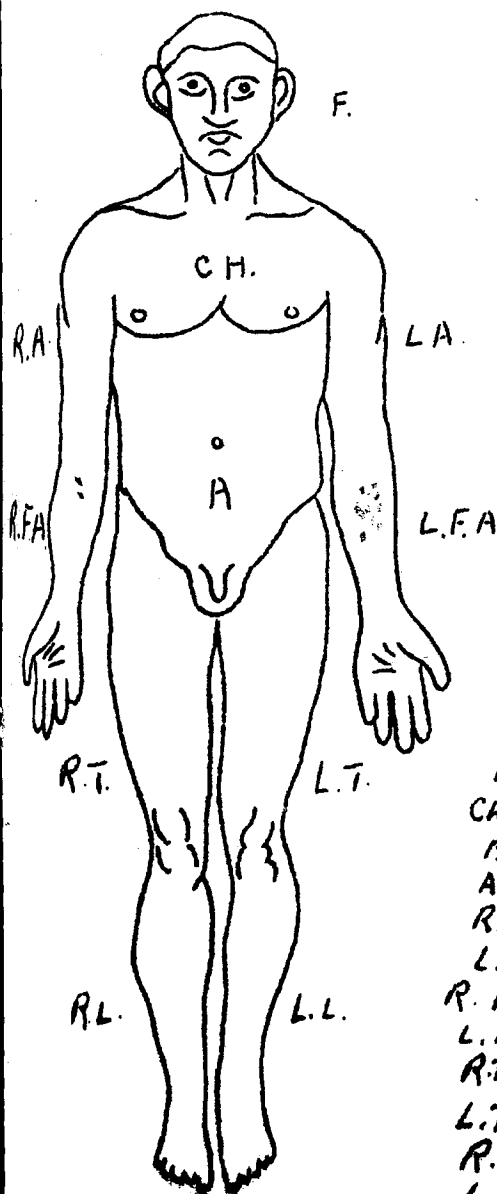
Description of Condition.

R.F.A. 2 small papules anteriorly, bend of elbow.

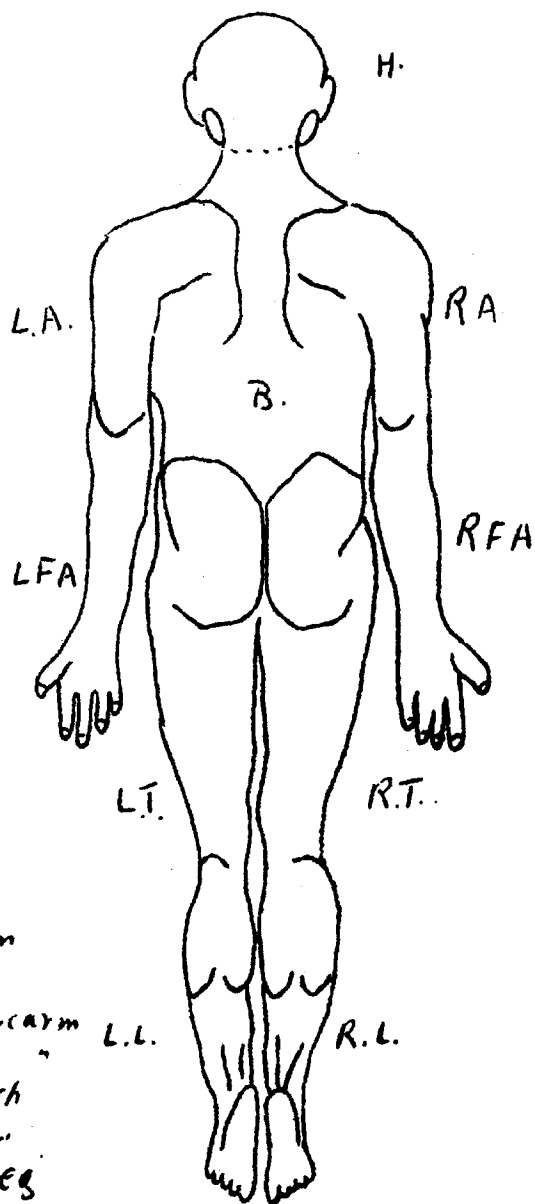
L.F.A. . A few pin head sized papules at bend of elbow, anteriorly.

Group. III.

Front.



Back.



H. Head
 F. Face
 CH. Chest
 B. Back
 A. Abdomen
 R.A. Right Arm
 L.A. Left "
 R.F.A. Right Forearm
 L.F.A. Left "
 R.T. Right Thigh
 L.T. Left "
 R.L. Right Leg
 L.L. Left leg.

Name. Age. Occupation. Length of Service.
 WS (U). 33 yrs Paraffin sheds 1 year.

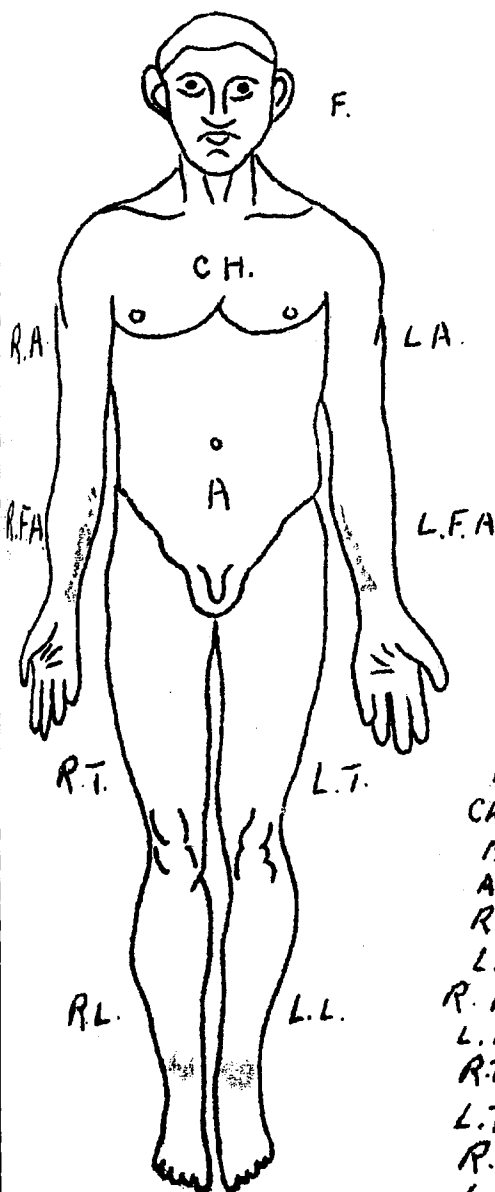
Description of Condition.

R.F.A and L.F.A. slight papular dermatitis ulnar aspects.

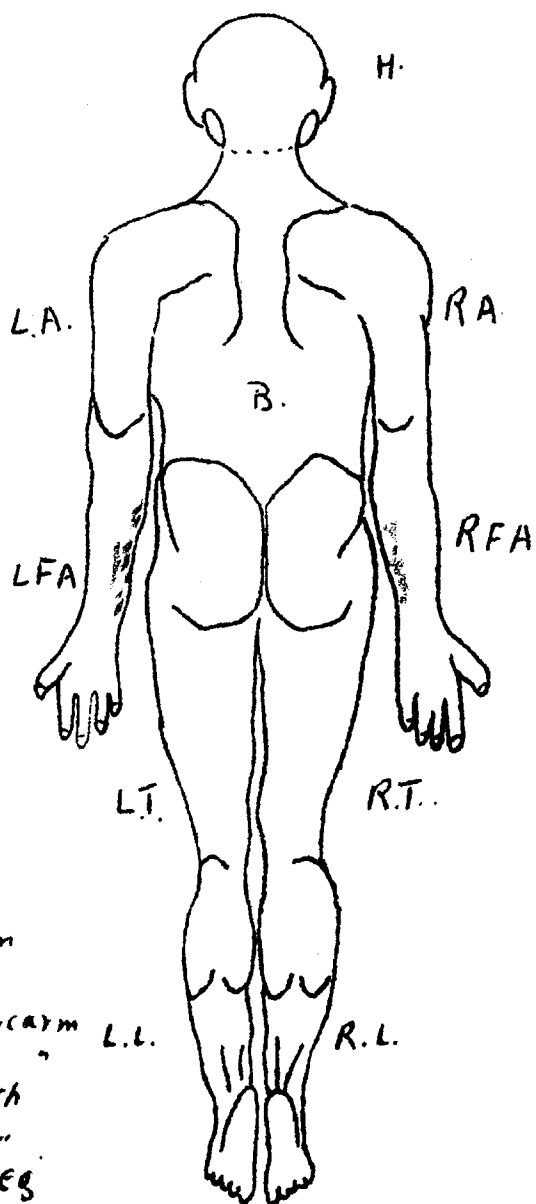
R.L. & L.L. A few papules dorsal surfaces both feet above ankles.

Group. III.

Front.



Back.



H. Head
 F. Face.
 CH. Chest.
 B. Back.
 A. Abdomen
 R.A. Right Arm
 L.A. Left "
 R.F.A. Right Forearm
 L.F.A. Left "
 R.T. Right Thigh
 L.T. Left "
 R.L. Right Leg
 L.L. Left leg.

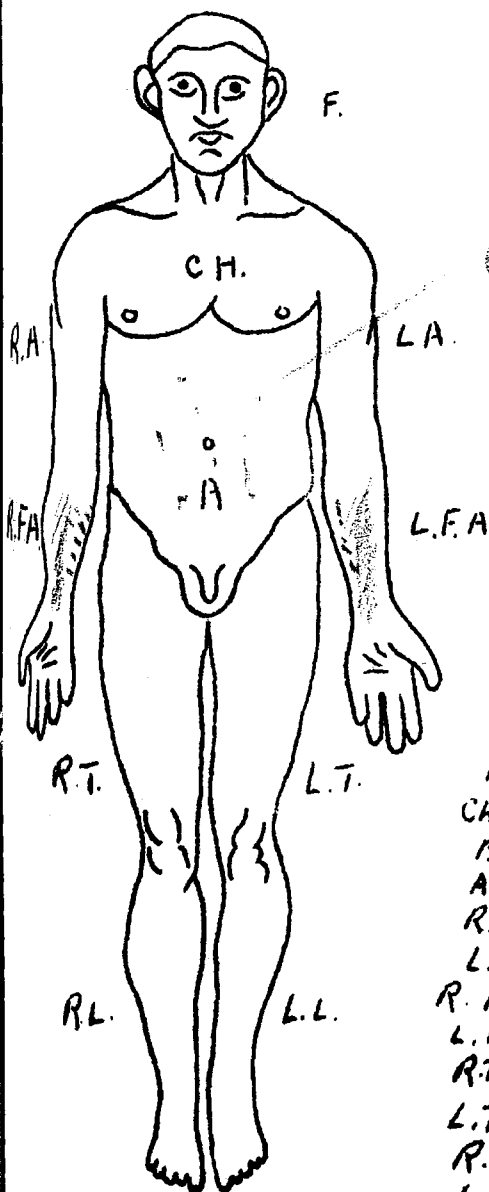
Name. Age. Occupation. Length of Service.
 D. McG. (U). 23 yrs Paraffin sheds 7½ yrs.

Description of A. some small blackheads.

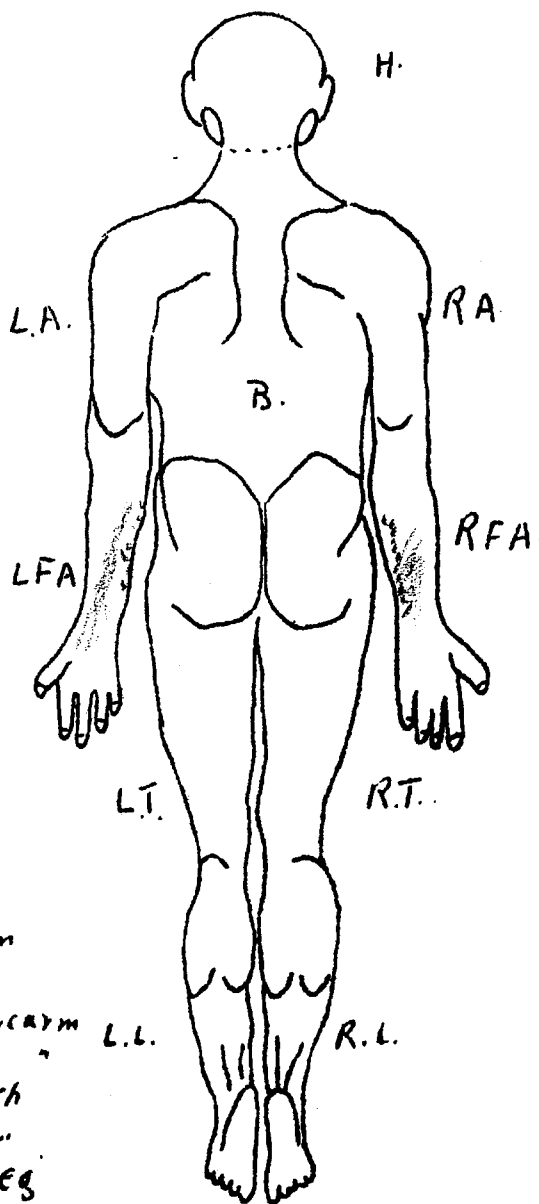
Condition. R.F.A and L.F.A.— slight erythematous dermatitis a few papules ulnar aspect.

Group. III.

Front.



Back.



H. Head
 F. Face.
 Ch. Chest.
 B. Back.
 A. Abdomen
 R.A. Right Arm
 L.A. Left "
 R.F.A. Right Forearm L.L.
 L.F.A. Left "
 R.T. Right Thigh
 L.T. Left "
 R.L. Right Leg
 L.L. Left leg.

<u>Name.</u>	<u>Age.</u>	<u>Occupation.</u>	<u>Length of Service.</u>
J.H. (U).	63 yrs.	Paraffin sheds	12 yrs.

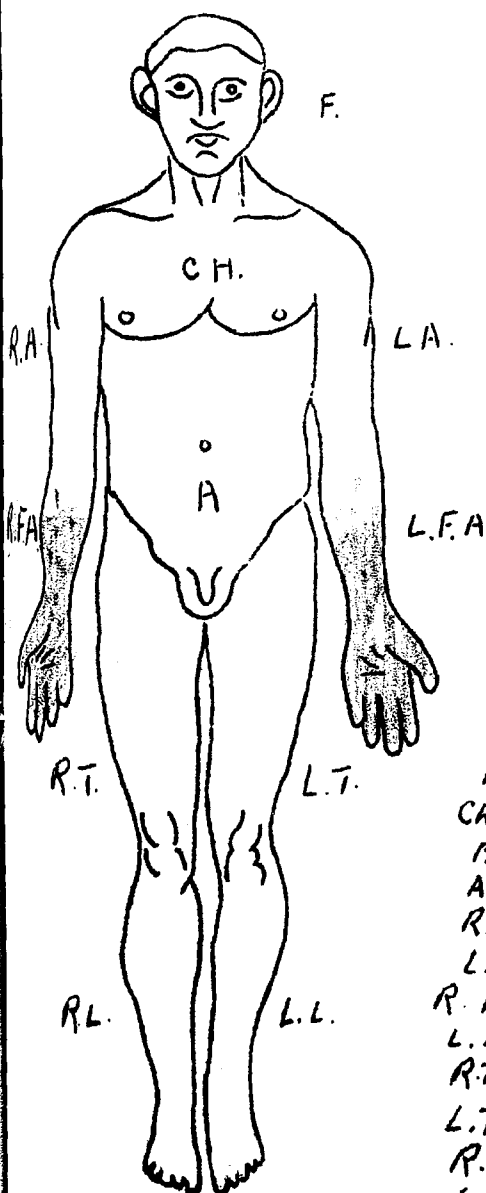
Description of
Condition.

Skin very dry over lower end of right forearm above wrist. Skin thin and hyperaemic (circulatory)
Very small scaly earts over forearm .

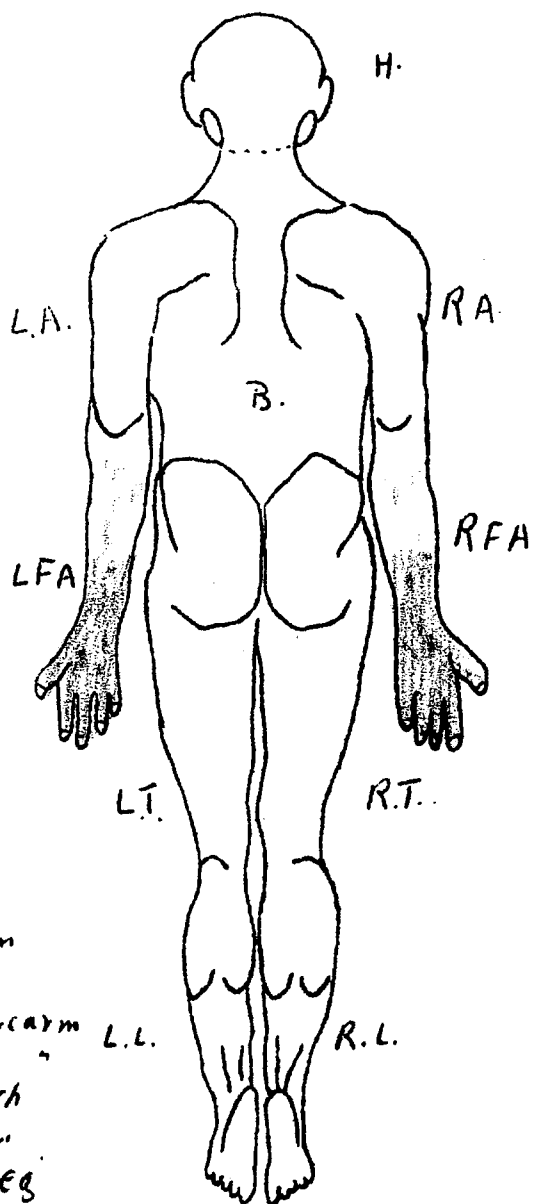
L.F.A. skin dry and hyperaemic (circulatory)
No erythema, Scaly warts over forearm, a few scales dorsum of hand.

Group. III.

Front.



Back.



H. Head
F. Face.
Ch. Chest.
B. Back.
A. abdomen
R.A. Right Arm
L.A. Left "
R.F.A. Right Forearm L.L.
L.F.A. Left " "
R.T. Right Thigh
L.T. Left " "
R.L. Right Leg
L.L. Left leg.

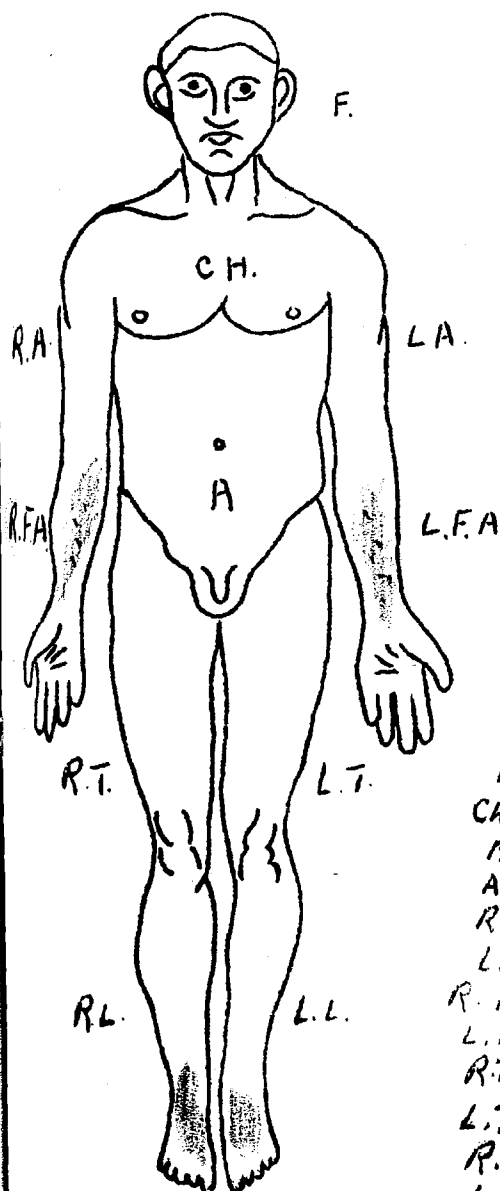
Name. Age. Occupation. Length of Service.
 A. M. ((U)). 47 yrs Paraffin sheds. 18 yrs.

Description of Condition.

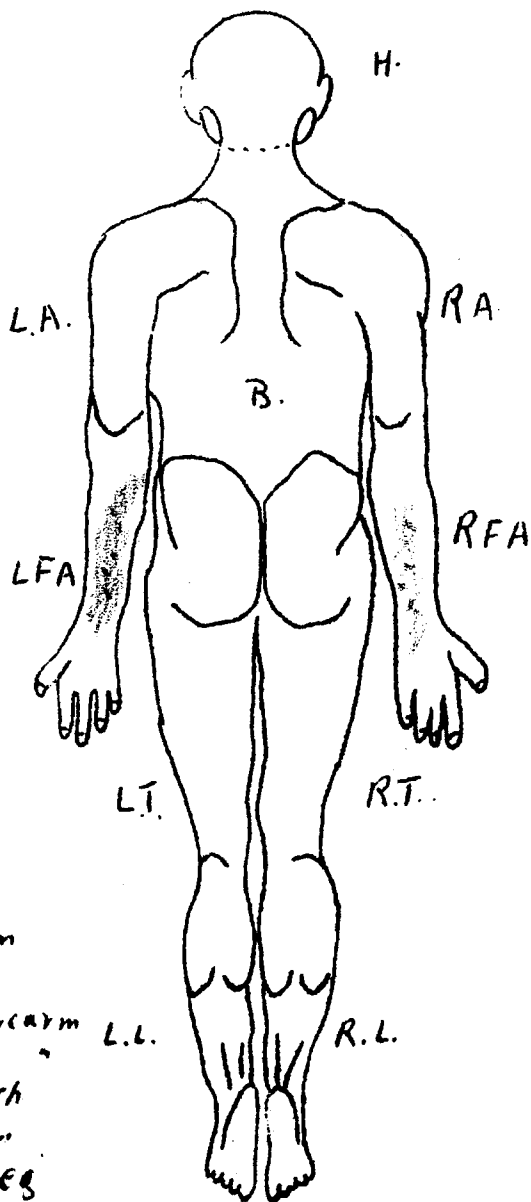
R.F.A.
 L.F.A. slight dermatitis with a few papules
 front and back.
 R.L.
 L.L. slight erythem. dermatitis dorsi of feet.

Group. III.

Front.



Back.



H. Head
 F. Face
 CH. Chest
 B. Back
 A. Abdomen
 R.A. Right Arm
 L.A. Left "
 R.F.A. Right Forearm
 L.F.A. Left "
 R.T. Right Thigh
 L.T. Left "
 R.L. Right Leg
 L.L. Left leg.

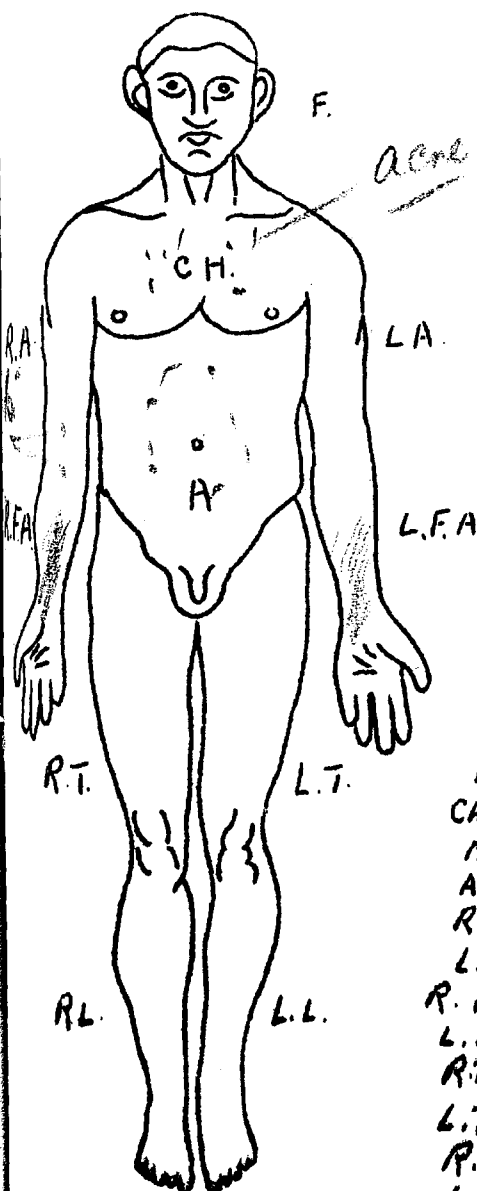
Name. Age. Occupation. Length of Service.
 T.N. (U). 31 yrs. Refinery (Sweating Ho.) 18 yrs.

Description of Condition.

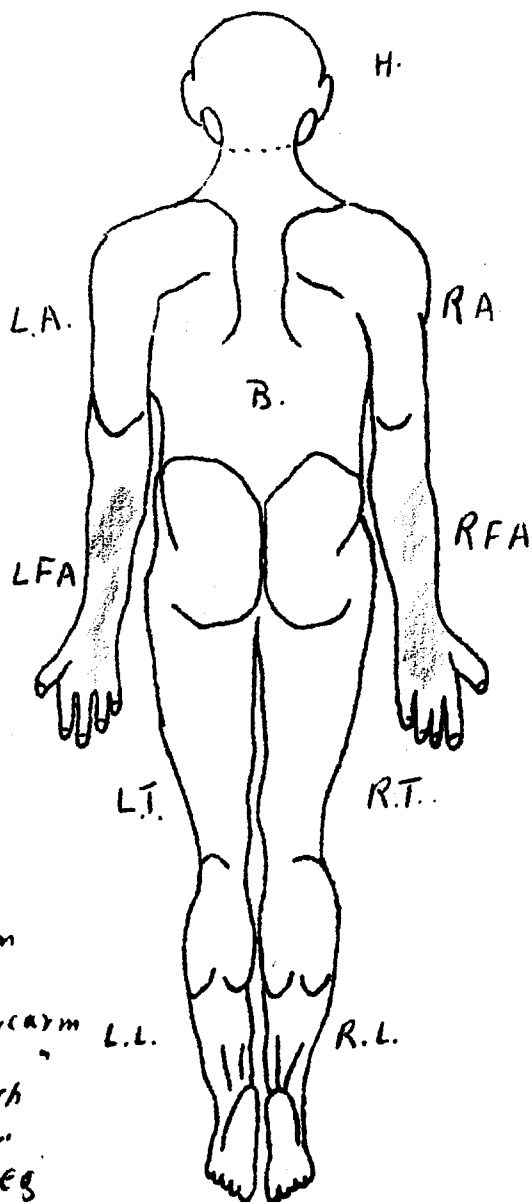
Ch. A. Some blackheads.
 R.A. Two tiny scaly warts, one above, and one below elbow. dermatitis over R.F.A and hand. back and front.
 L.A. slight erythematous dermatitis forearm anteriorly.

Group. III.

Front.



Back.



H. Head
 F. Face.
 Ch. Chest.
 B. Back.
 A. Abdomen
 R.A. Right Arm
 L.A. Left "
 R.F.A. Right Forearm L.L.
 L.F.A. Left "
 R.T. Right Thigh
 L.T. Left "
 R.L. Right Leg
 L.L. Left leg.

Name. Age. Occupation. Length of Service.
 D. (U). 59 yrs. Paraffinsheds. 37 yrs.

Description of Condition.

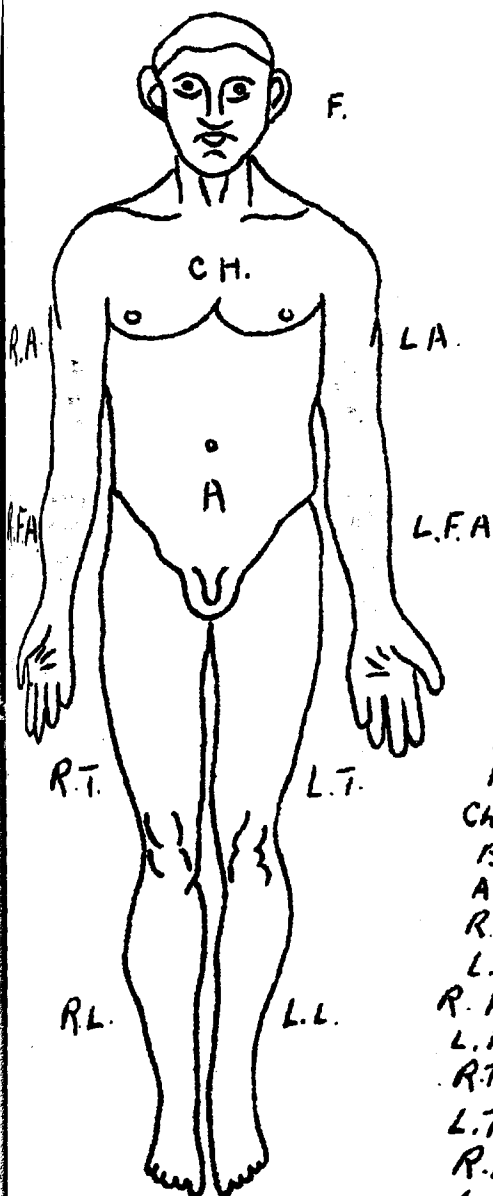
R.A. In front over biceps small scaly warts.
 R.F.A. Numerous small scaly warts anteriorly.

L.A. Small scaly warts over biceps.
 L.F.A. Numerous scaly warts anteriorly and posteriorly.

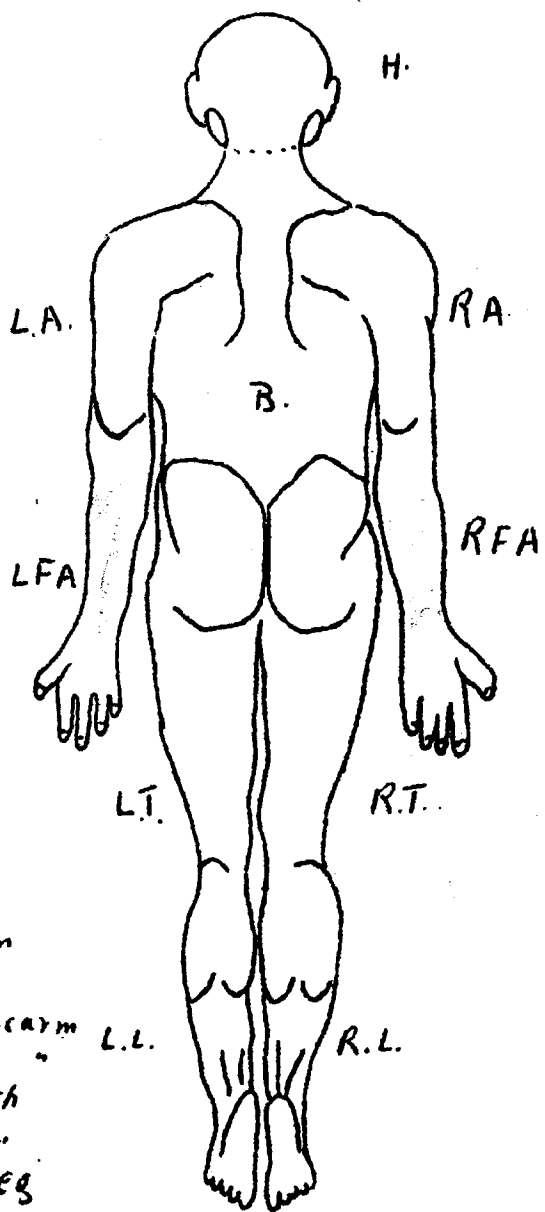
X Some scarring from healed dermatitis.

Group. III.

Front.



Back.



H. Head
 F. Face.
 Ch. Chest.
 B. Back.
 A. Abdomen
 R.A. Right Arm
 L.A. Left "
 R.F.A. Right Forearm
 L.F.A. Left " "
 R.T. Right Thigh
 L.T. Left " "
 R.L. Right Leg
 L.L. Left leg.

<u>Name.</u>	<u>Age.</u>	<u>Occupation.</u>	<u>Length of Service.</u>
J.S. (U).	69 yrs.	Foreman, Paraf sheds & Refinery.	55 yrs.

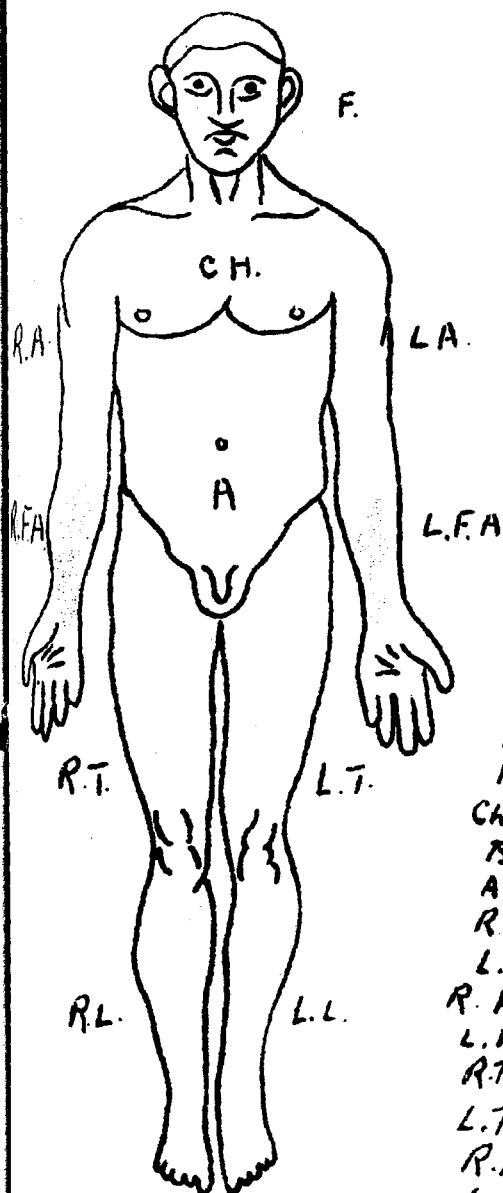
Description of
Condition.

RA..
L.A..
R.F.A..
L.F.A..

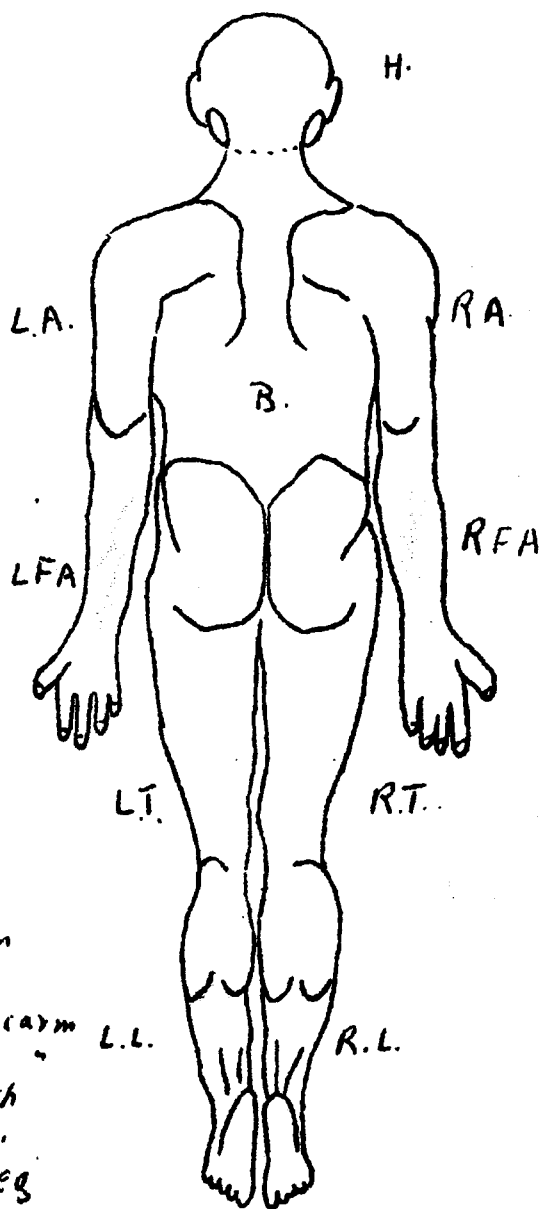
Slight former dermatitis now healed.

Group. III.

Front.



Back.



H. Head
F. Face.
Ch. Chest.
B. Back.
A. Abdomen
RA Right Arm
LA Left "
R.FA Right Forearm
L.FA Left " "
R.T. Right Thigh
L.T. Left " "
R.L. Right Leg
L.L. Left leg.

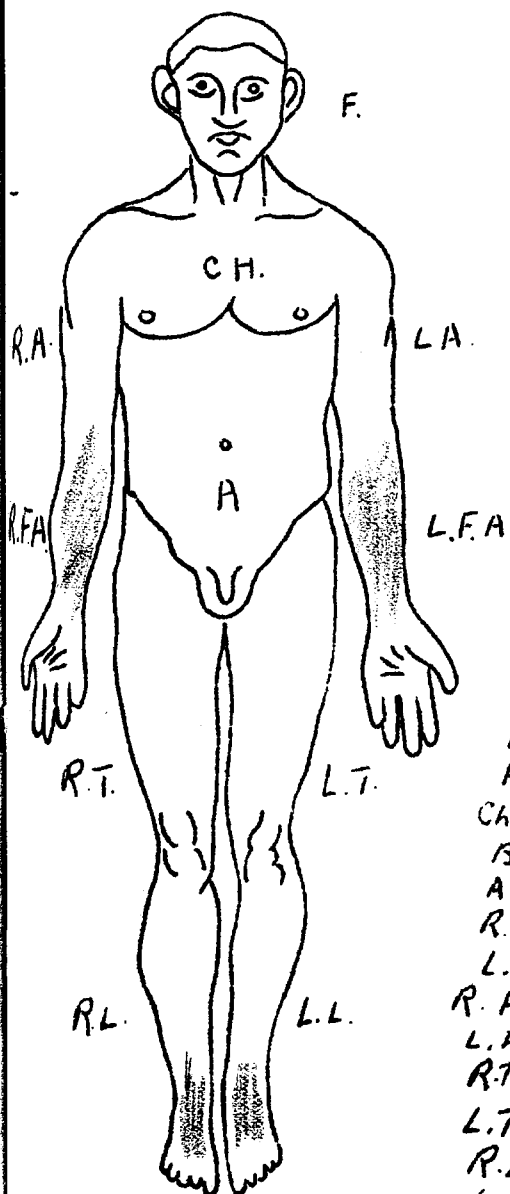
Name. Age. Occupation. Length of Service.

J.K. (A). 52 years Paraffin Sheds. 29 years.

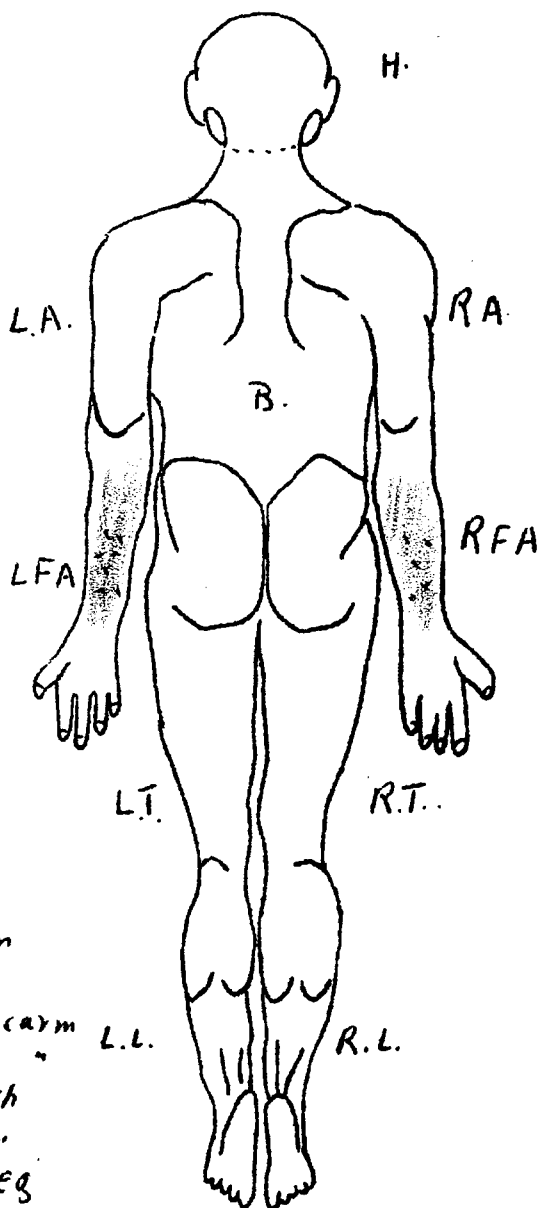
Description of Condition. R.F.A. (Slight erythematous dermatitis both
(forearms, back and front,,
R.F.A. (Several isolated papules backs of both forearm
Feet, erythematous dermatitis over dorsal surfaces
both feet.

Group. 3.

Front.



Back.



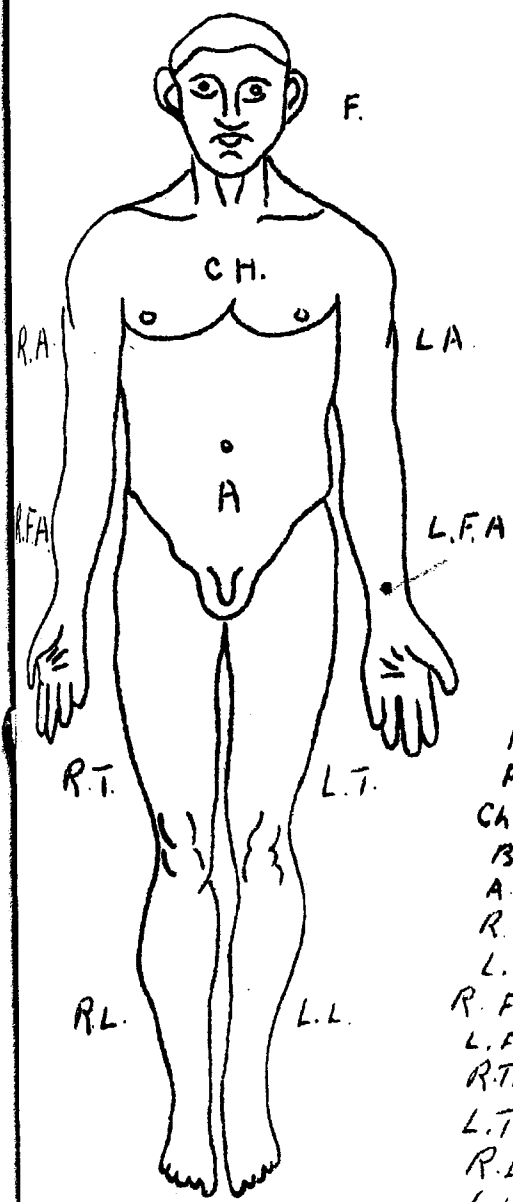
H. Head
F. Face.
Ch. Chest
B. Back.
A. abdomen
R.A. Right arm
L.A. Left "
R.F.A. Right Forearm L.L.
L.F.A. Left " "
R.T. Right Thigh
L.T. Left " "
R.L. Right Leg
L.L. Left leg.

Name. Age. Occupation. Length of Service.
 R.T. (A). 42 yrs. Paraffin Sheds. 23 yrs (6 years
 (Sweating Sheds) in Sweating S.

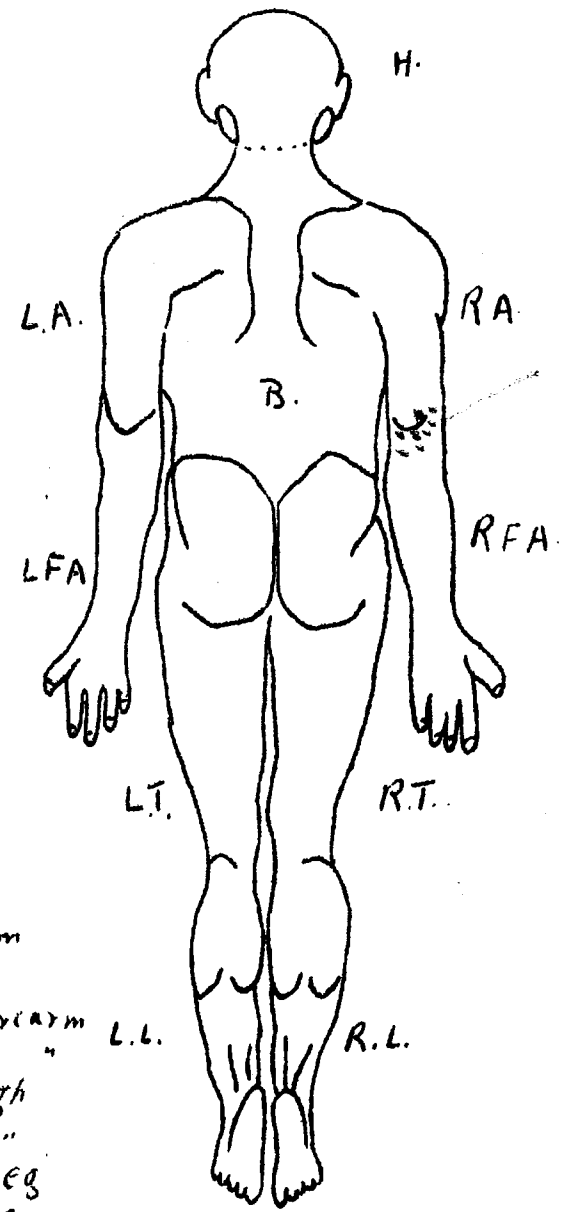
Description of Condition. Slight pustular dermatitis on back of right elbow.
 Small papule over left wrist.

Group. 3.

Front.



Back.



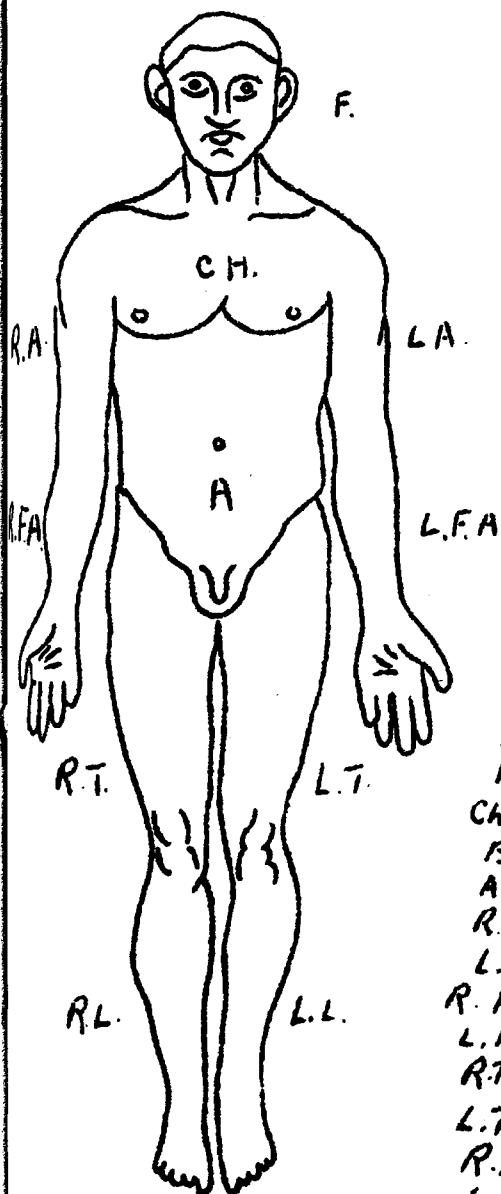
- H. Head
- F. Face
- CH. Chest
- B. Back
- A. Abdomen
- R.A. Right Arm
- L.A. Left "
- R.F.A. Right Forearm
- L.F.A. Left " "
- R.T. Right Thigh
- L.T. Left " "
- R.L. Right Leg
- L.L. Left leg.

Name. Age. Occupation. Length of Service.
 M.T. (A). 32 yrs. (Sweating Sheds.
~~XXXXXXXXXXXX~~
~~XXXXXXXXXXXX~~ 18 years.

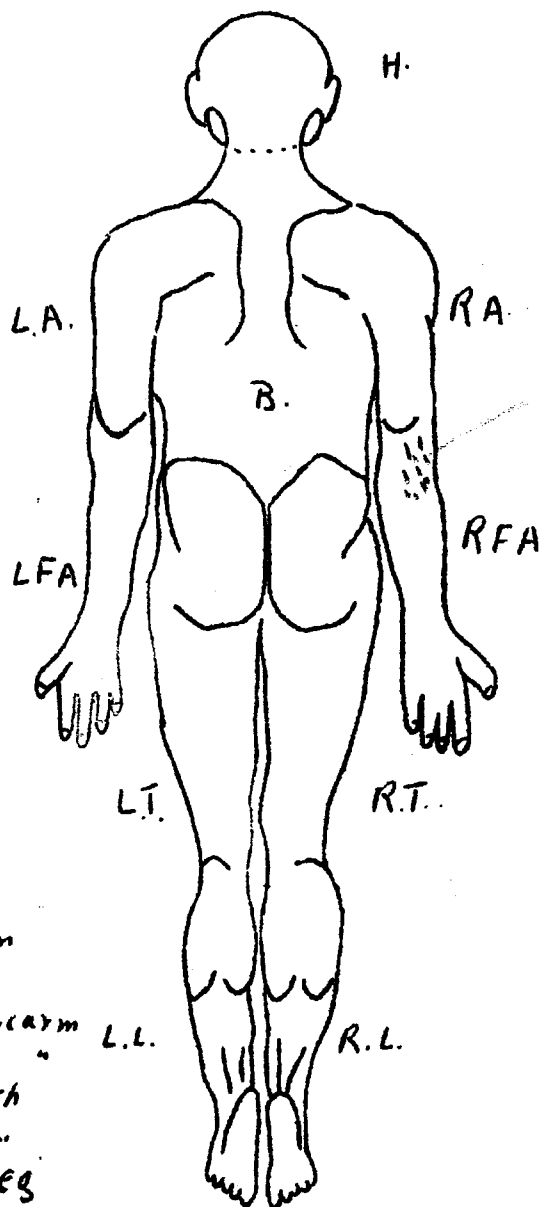
Description of Condition. R.F.A. Slight pustular dermatitis below elbow.

Group. 3.

Front.



Back.



H. Head
 F. Face.
 CH. Chest.
 B. Back.
 A. Abdomen
 R.A. Right Arm
 L.A. Left "
 R.F.A. Right Forearm L.L.
 L.F.A. Left " "
 R.T. Right Thigh
 L.T. Left " "
 R.L. Right Leg
 L.L. Left leg.

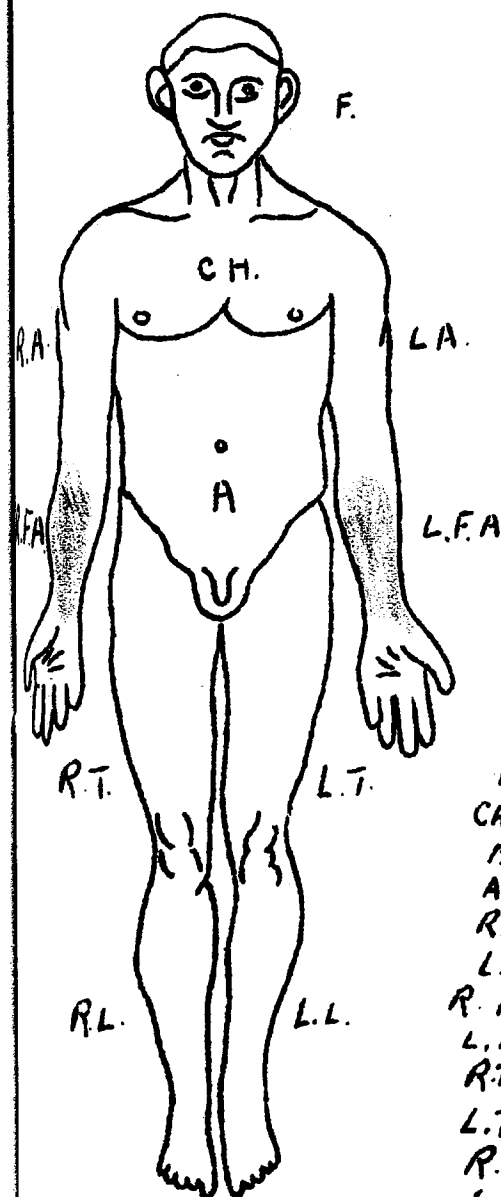
Name.	Age.	Occupation.	Length of Service.
H.W. (A).	36 yrs.	Sweating Paraffin Sheds.	14 years.

Description of
Condition.

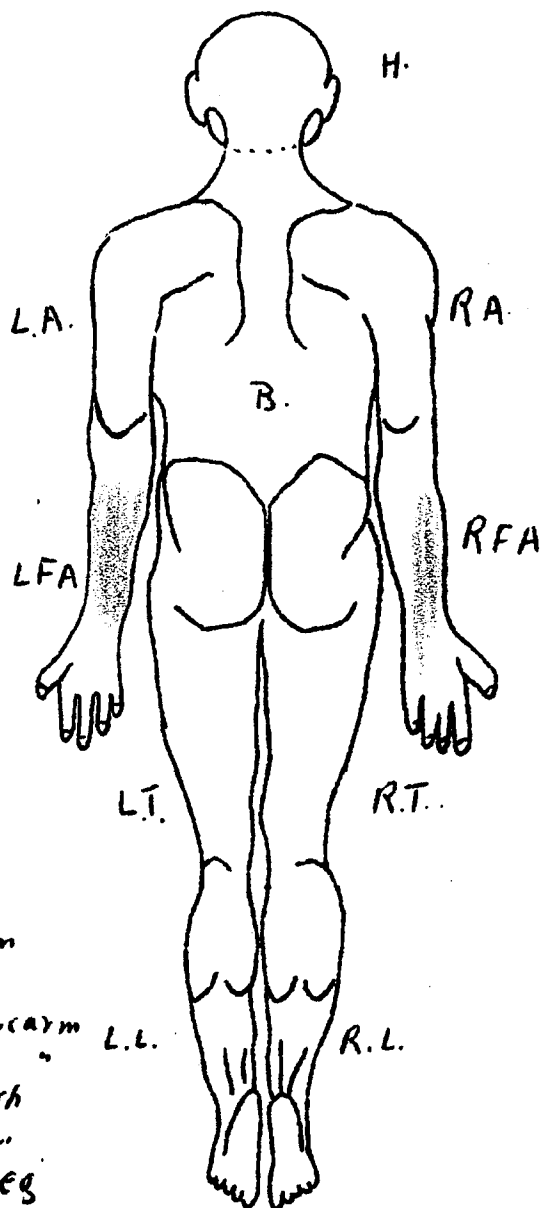
R.F.A. and L.F.A. slight erythematous dermatitis
dorsal and anterior surfaces.

Group. 3.

Front.



Back.



H. Head
F. Face.
CH. Chest.
B. Back.
A. Abdomen
R.A. Right Arm
L.A. Left "
R.F.A. Right Forearm
L.F.A. Left "
R.T. Right Thigh
L.T. Left "
R.L. Right Leg
L.L. Left leg.

Name. G. McL. Age. (A) 45 years Occupation. Sweating ~~Paraffin~~ Sheds . Length of Service. 26 years.

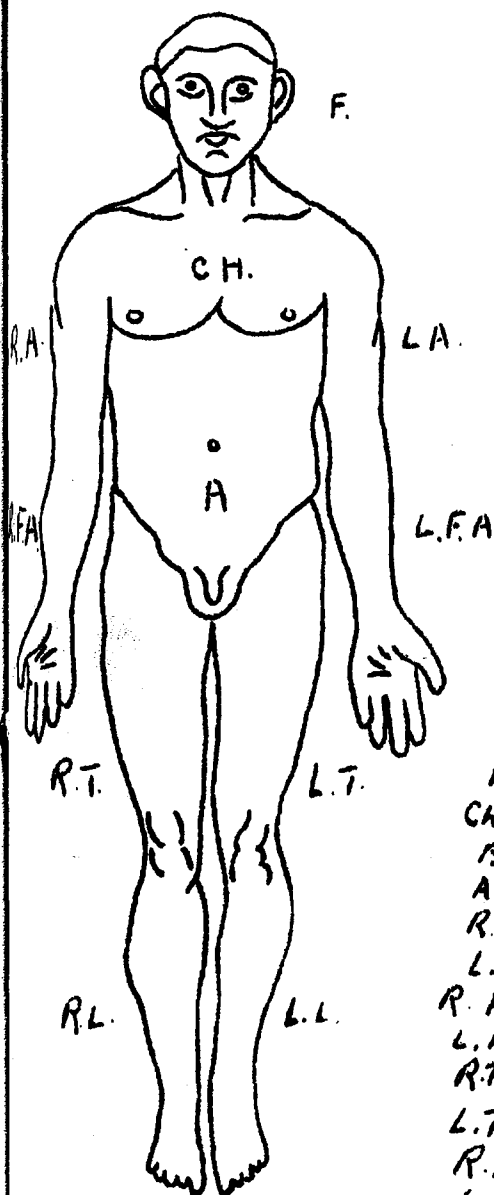
Description of Condition.

Pustular dermatitis on posterior aspects of both shoulders.

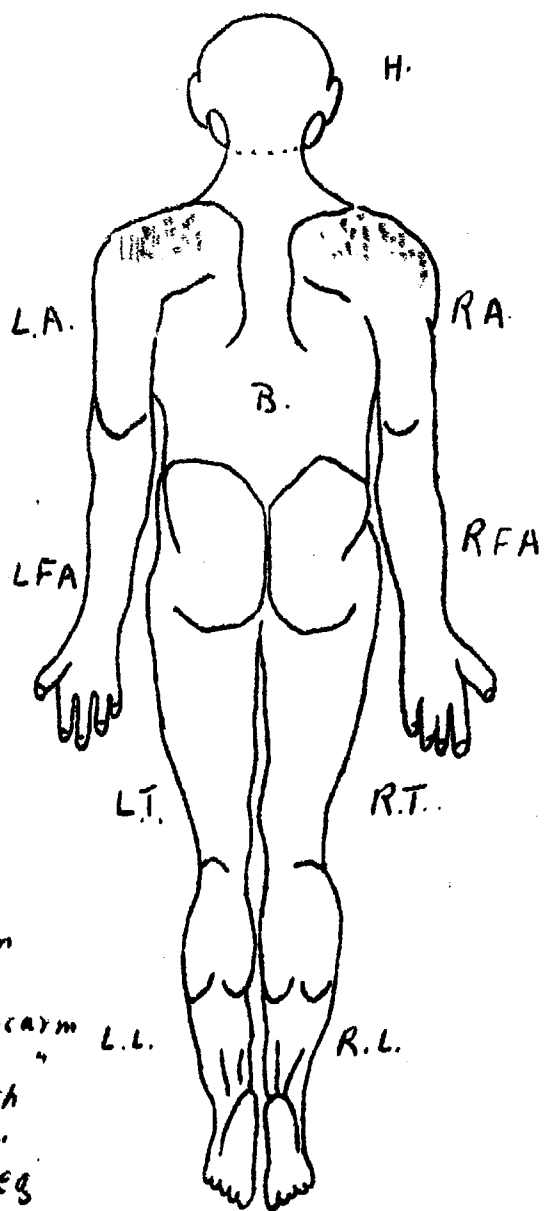
(Says that oil drops on his shoulders when at work .

Group. 3.

Front.



Back.



H. Head
F. Face.
CH. Chest
B. Back
A. Abdomen
R.A. Right Arm
L.A. Left "
R.FA. Right Forearm
L.FA. Left " "
R.T. Right Thigh
L.T. Left " "
R.L. Right Leg
L.L. Left leg.

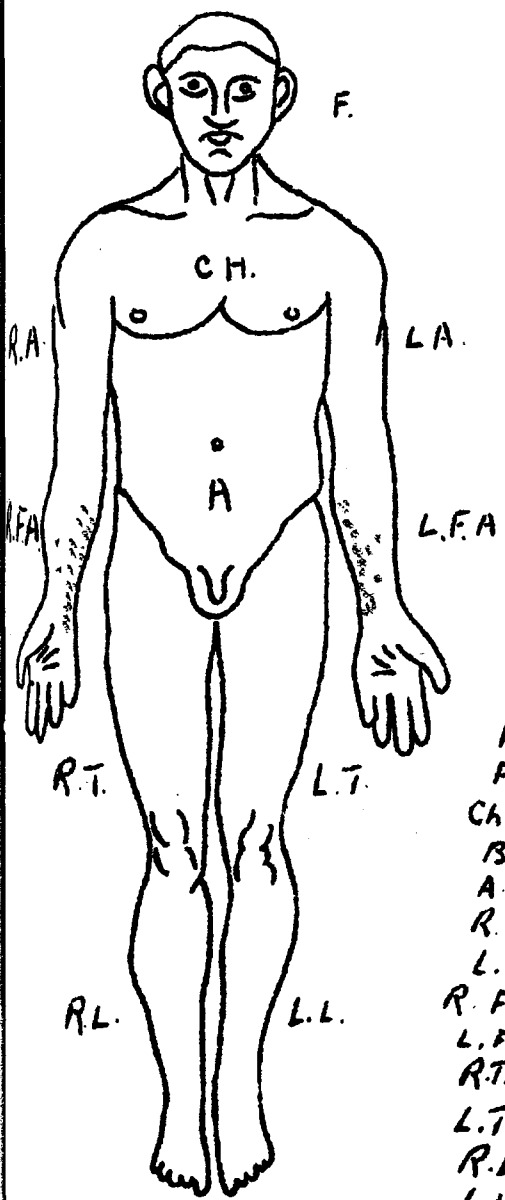
Name. Age. Occupation. Length of Service.
 P. McG. (A). 43 yrs. Paraffin Sheds. 20 yrs.

Description of
Condition.

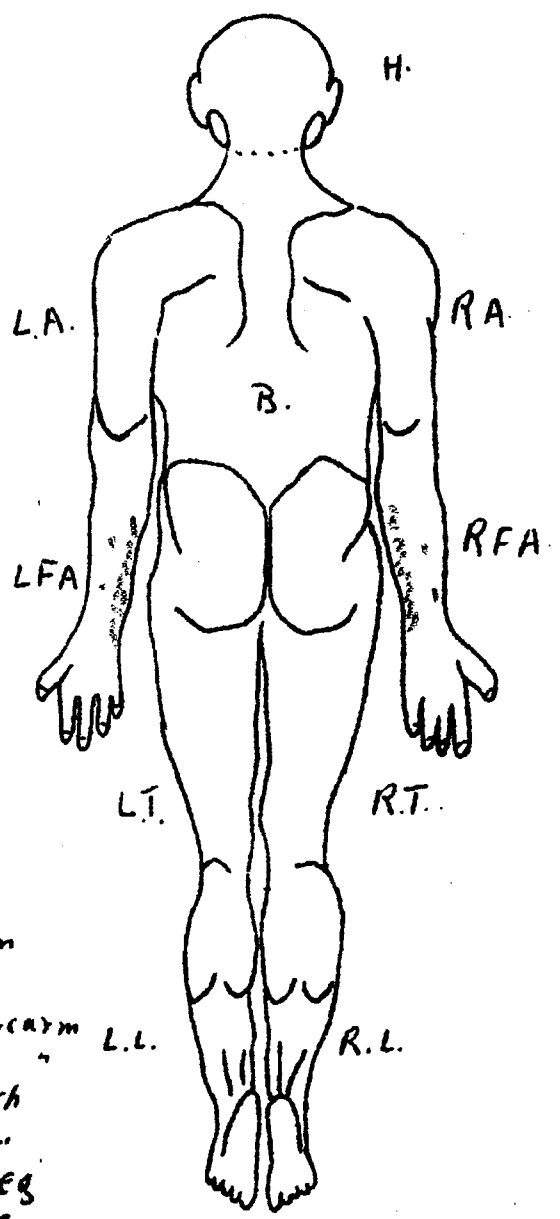
Papular dermatitis ulnar sides both forearms.

Group. 3.

Front.



Back.



- H. Head
- F. Face
- CH. Chest
- B. Back
- A. Abdomen
- R.A. Right Arm
- L.A. Left "
- R.FA. Right Forearm
- L.FA. Left " "
- R.T. Right Thigh
- L.T. Left " "
- R.L. Right Leg
- L.L. Left leg.

Name. Age. 29 yrs . . Occupation. Paraffin Sheds. Length of Service. 4 years.

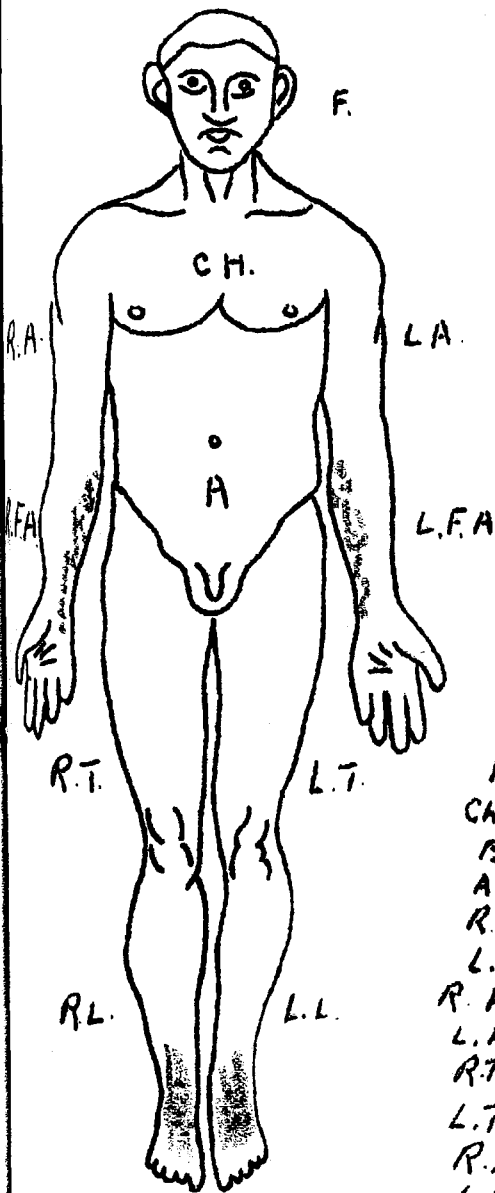
Description of Condition.

R.F.A. and L.F.A. papular and pustular dermatitis ulnar borders both forearms.

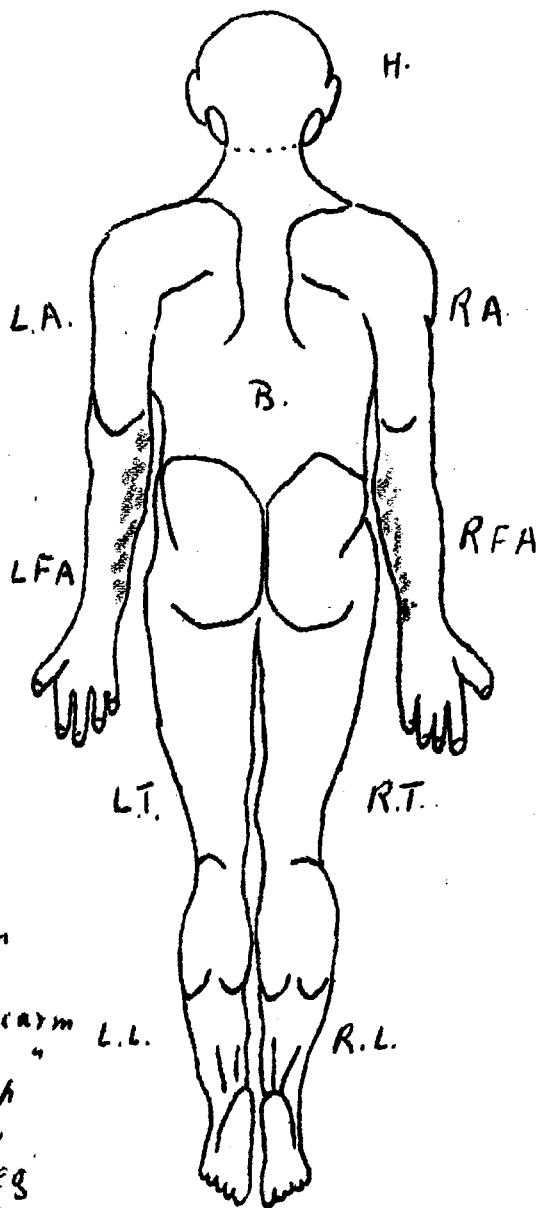
Slight erythematous and papular dermatitis of both feet.

Group. 3.

Front.



Back.



- H. Head
- F. Face
- CH. Chest
- B. Back
- A. Abdomen
- R.A. Right Arm
- L.A. Left "
- R.F.A. Right Forearm
- L.F.A. Left " "
- R.T. Right Thigh
- L.T. Left " "
- R.L. Right Leg
- L.L. Left leg.

Name. Age. Occupation. Length of Service.

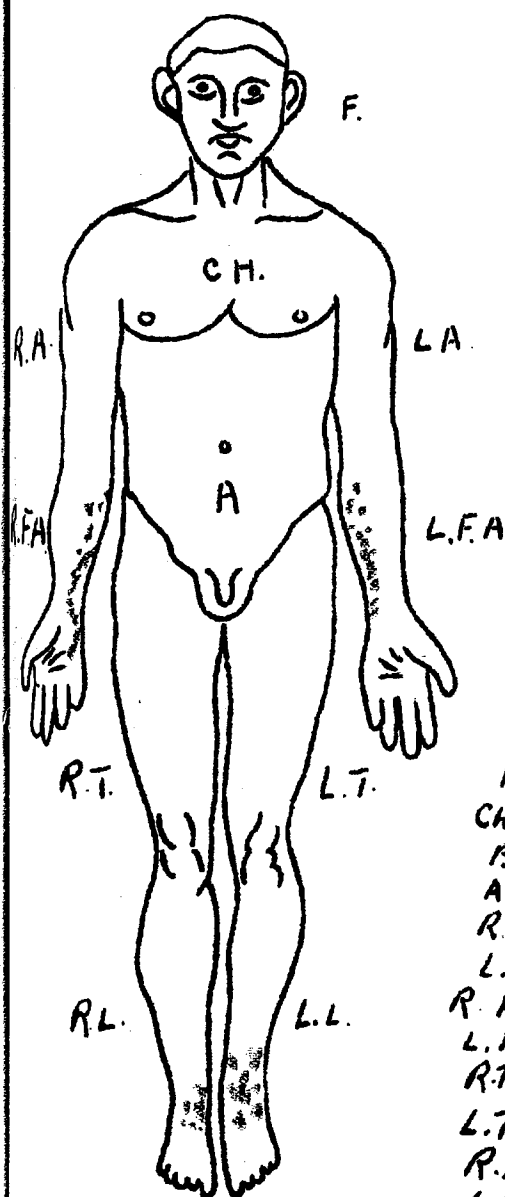
W.C. (A). 41 years. Paraffin Sheds. 1 year.

Description of Condition.

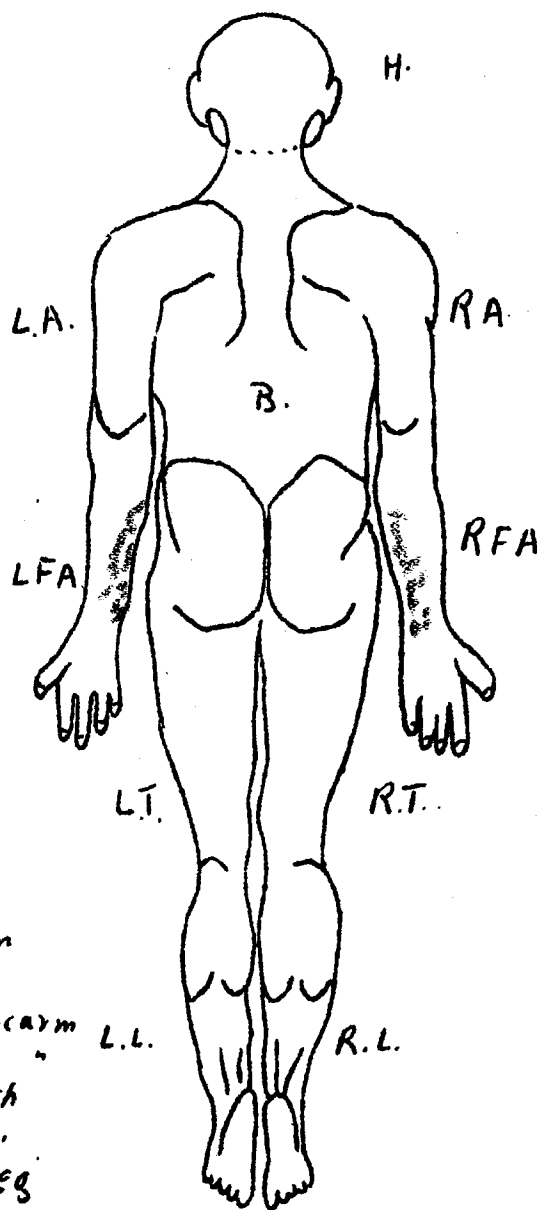
R.F.A. and L.F.A. Pustular dermatitis ulnar borders b
both forearms.
Feet. Pustular dermatitis dorsal surfaces both feet.

Group. 3.

Front.



Back.



H. Head
F. Face.
Ch. Chest.
B. Back.
A. Abdomen
R.A. Right Arm
L.A. Left "
R.F.A. Right Forearm
L.F.A. Left "
R.T. Right Thigh
L.T. Left "
R.L. Right Leg
L.L. Left leg.

Name. J.L. (A). Age. 48 years. Occupation. Paraffin Sheds. Length of Service. 28 years.
~~Examination of the~~

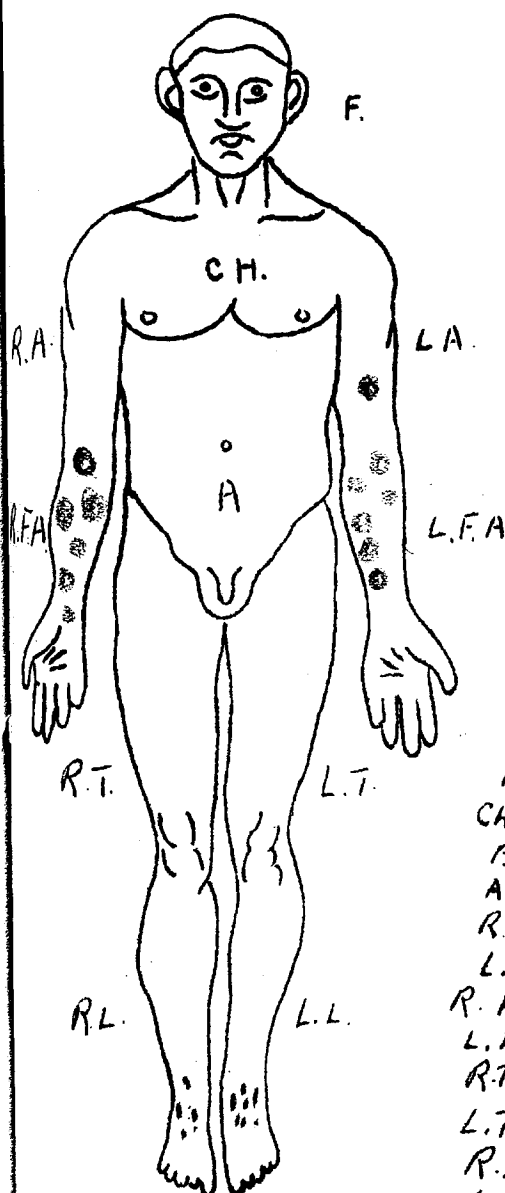
Description of Condition. R.F.A. and L.F.A. Over backs and fronts of both fore-arms are discolored patches of local congestion, without induration.

4 warty papules on left wrist and thumb.

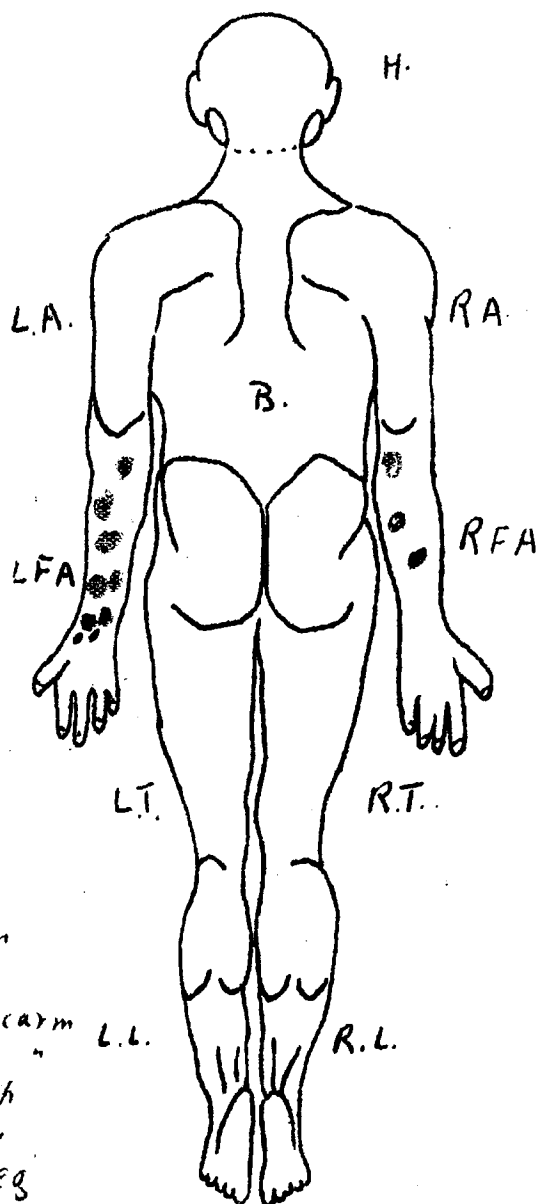
Slight papular dermatitis both feet, on dorsal surface

Group. 3.

Front.



Back.



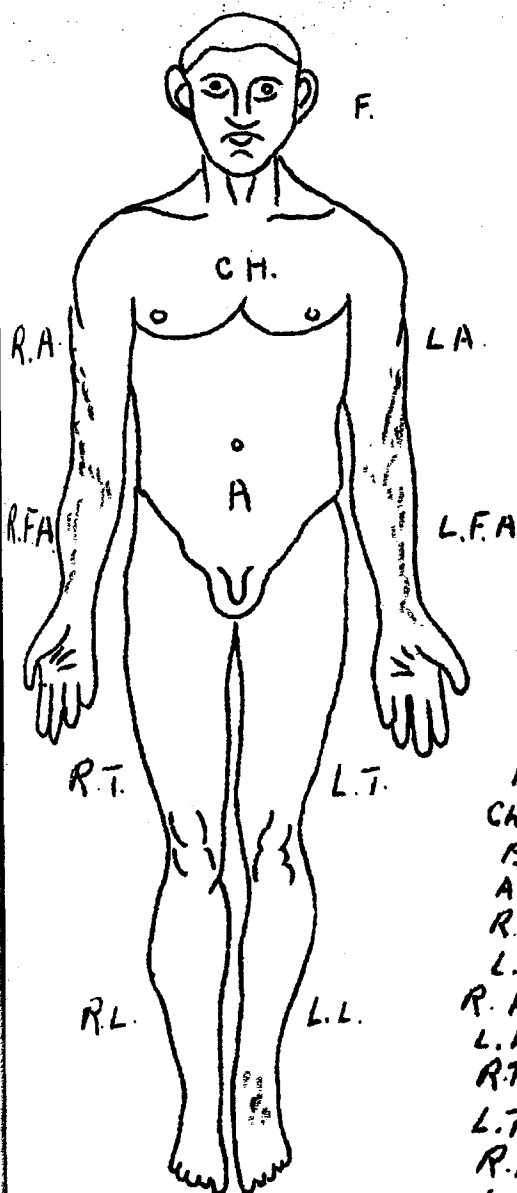
H. Head
 F. Face.
 CH. Chest
 B. Back.
 A. Abdomen
 R.A. Right Arm
 L.A. Left "
 R.F.A. Right Forearm
 L.F.A. Left " "
 R.T. Right Thigh
 L.T. Left " "
 R.L. Right Leg
 L.L. Left leg.

<u>Name.</u>	<u>Age.</u>	<u>Occupation.</u>	<u>Length of Service.</u>
C.F. (A).	32 yrs.	Paraffin Sheds.	4 years .

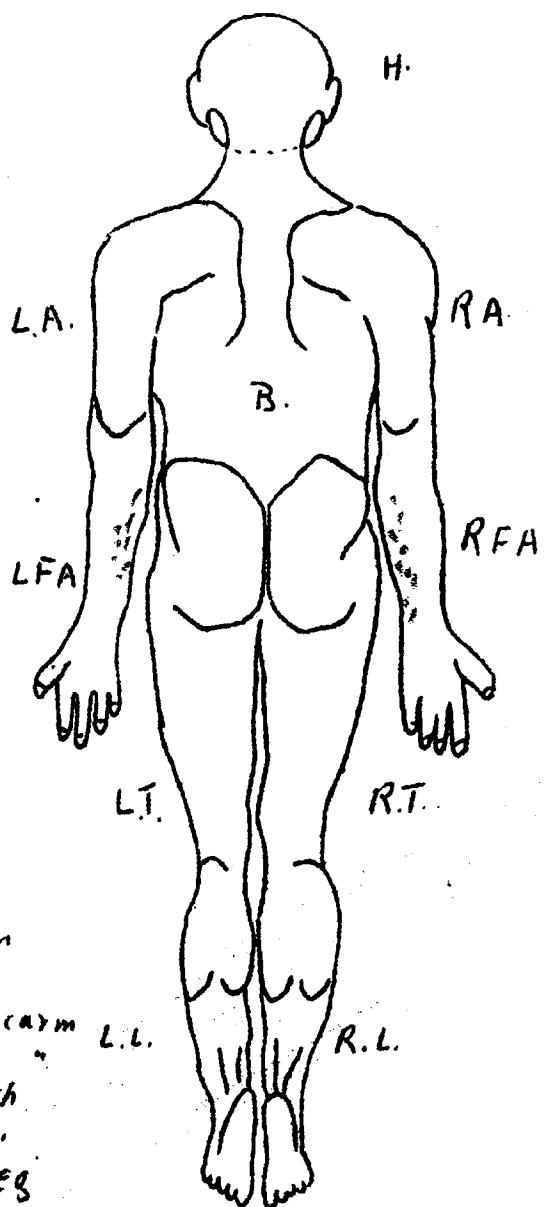
Description of R.A. and R.F.A. Early papular and pustular dermatitis.
Condition. L.A. and L.F.A. Slight papular and pustular dermatitis
 L.L. Papular dermatitis left foot.

Group. 3.

Front.



Back.



H. Head
 F. Face.
 CH. Chest.
 B. Back.
 A. Abdomen
 R.A. Right Arm
 L.A. Left "
 R.F.A. Right Forearm
 L.F.A. Left "
 R.T. Right Thigh
 L.T. Left "
 R.L. Right Leg
 L.L. Left leg.

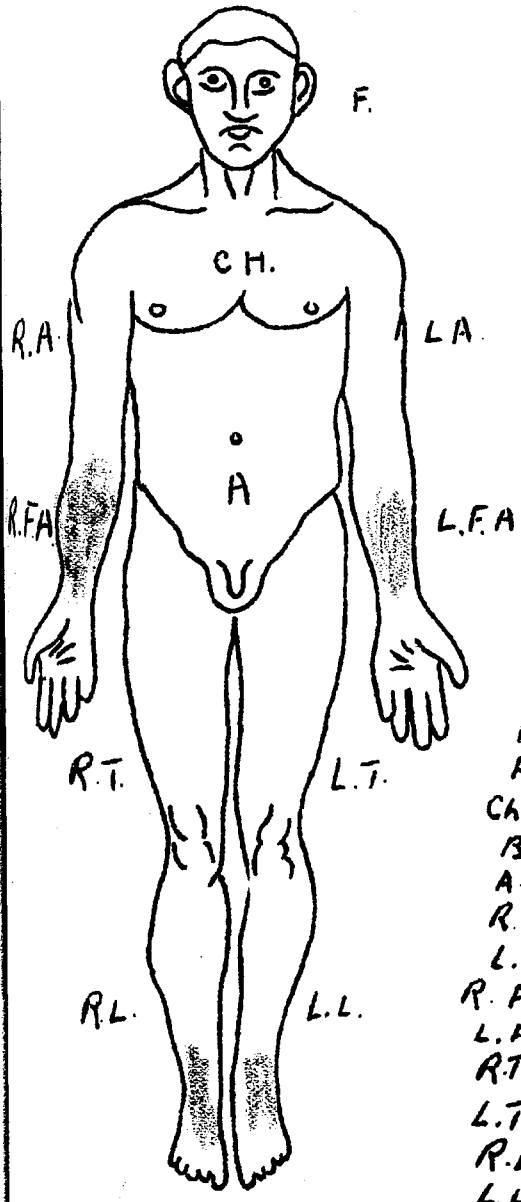
<u>Name.</u>	<u>Age.</u>	<u>Occupation.</u>	<u>Length of Service.</u>
J.A. (A).	39 yrs..	Paraffin Sheds .	27 years.

Description of Condition. Very slight erythematous dermatitis both forearms front and back.

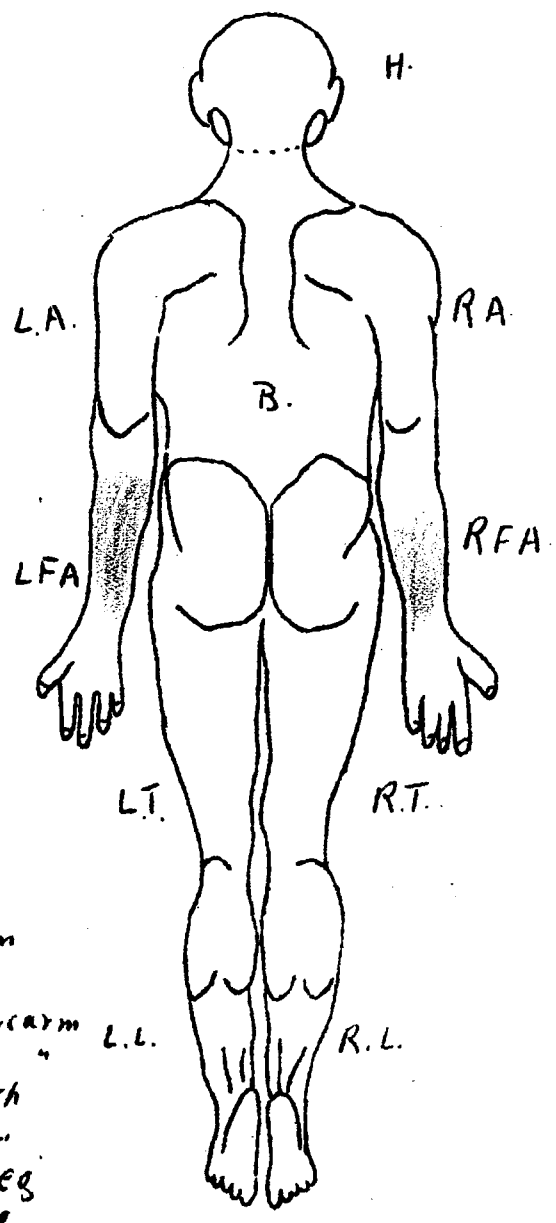
Do, on dorsal surfaces both ankles

Group. 3.

Front.



Back.



- H. Head
- F. Face
- CH. Chest
- B. Back
- A. Abdomen
- R.A. Right Arm
- L.A. Left "
- R.FA. Right Forearm
- L.FA. Left " "
- R.T. Right Thigh
- L.T. Left " "
- R.L. Right Leg
- L.L. Left leg.

Name. Age. Occupation. Length of Service.
 G. (B). 40 yrs. Paraffin Sheds 5 years.

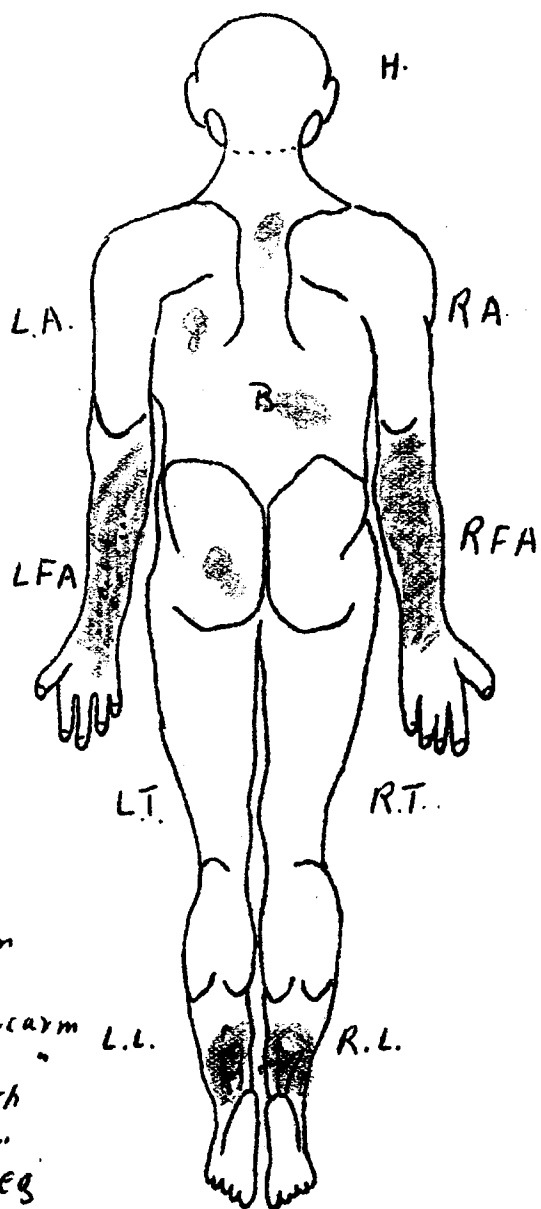
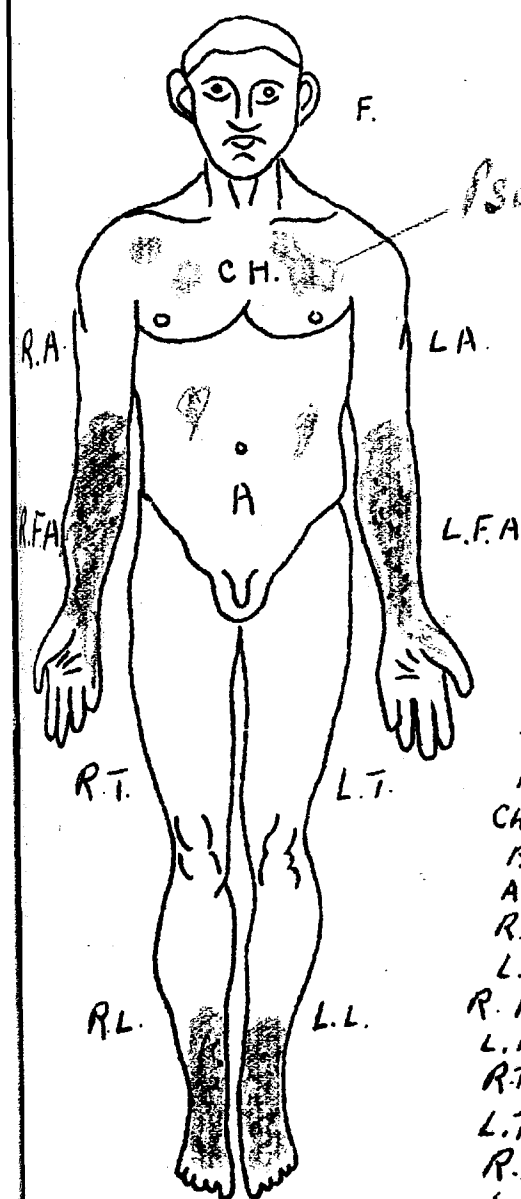
Description of Condition.

Ch. & B. Some chronic psoriasis.
 R.A. Erythematous and papular dermatitis over anterior and posterior surfaces of forearm. Warty scales R.F.A. anteriorly.
 L.A. ditto. L.L. Erythematous dermatitis round ankle and foot. Warts over dorsum of foot.
 LL. Similar to LL.

Group.
IV.

Front.

Back.



H. Head
 F. Face
 Ch. Chest
 B. Back
 A. Abdomen
 R.A. Right Arm
 L.A. Left "
 R.F.A. Right Forearm
 L.F.A. Left "
 R.T. Right Thigh
 L.T. Left "
 R.L. Right Leg
 L.L. Left leg.

GROUP 4:-

Those with an Extensive Eruption of
any type.

Name. Age. Occupation. Length of Service.
 O. McN. (A) . 62 yrs. Paraffin Sheds. 36 yrs.

Description of Condition.

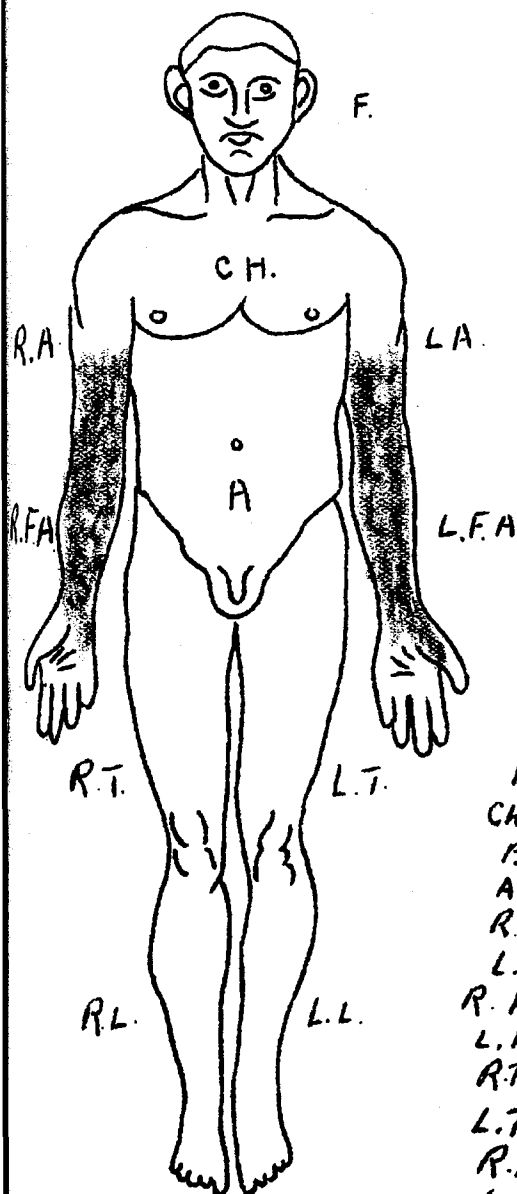
R.A. and L.A. diffuse extensive papular pustular and erythematous dermatitis lower halves, anterior and posterior surfaces.

R.F.A. and L.F.A. Extensive papular, pustular, and erythematous dermatitis anterior and posterior surfaces.

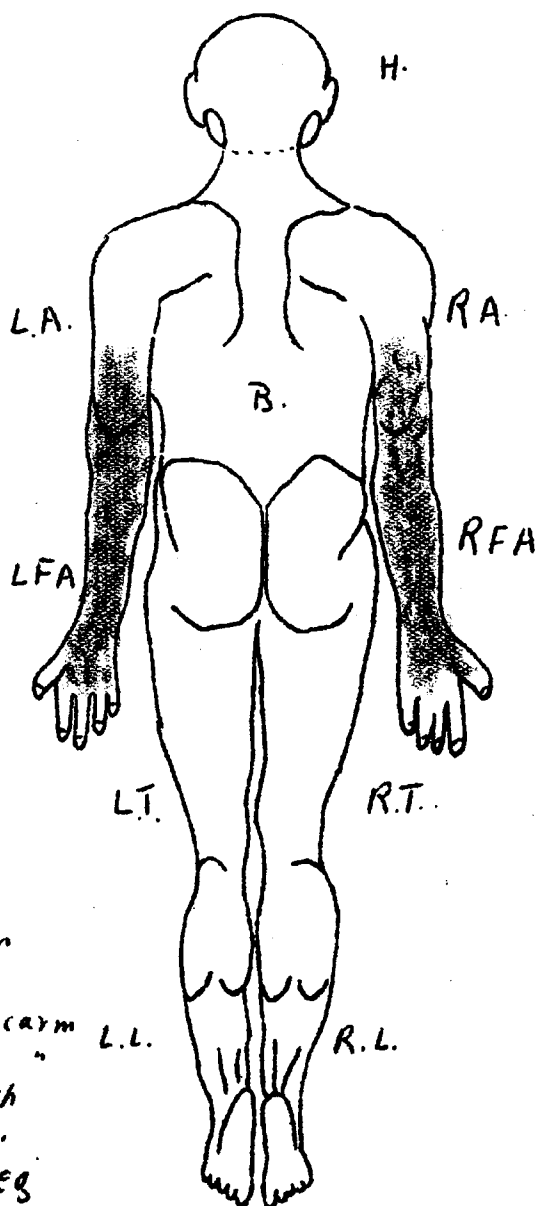
Numerous crusts and warts.

Group. 4.

Front.



Back.



H. Head
 F. Face.
 Ch. Chest
 B. Back.
 A. Abdomen
 R.A. Right Arm
 L.A. Left "
 R.F.A. Right Forearm L.L.
 L.F.A. Left "
 R.T. Right Thigh
 L.T. Left "
 R.L. Right Leg
 L.L. Left leg.

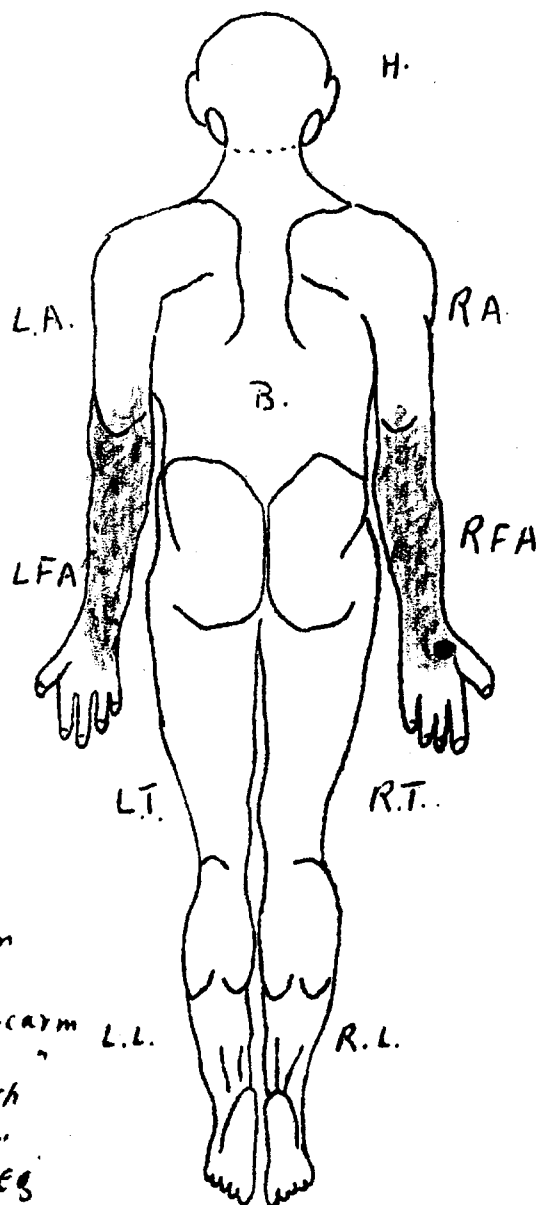
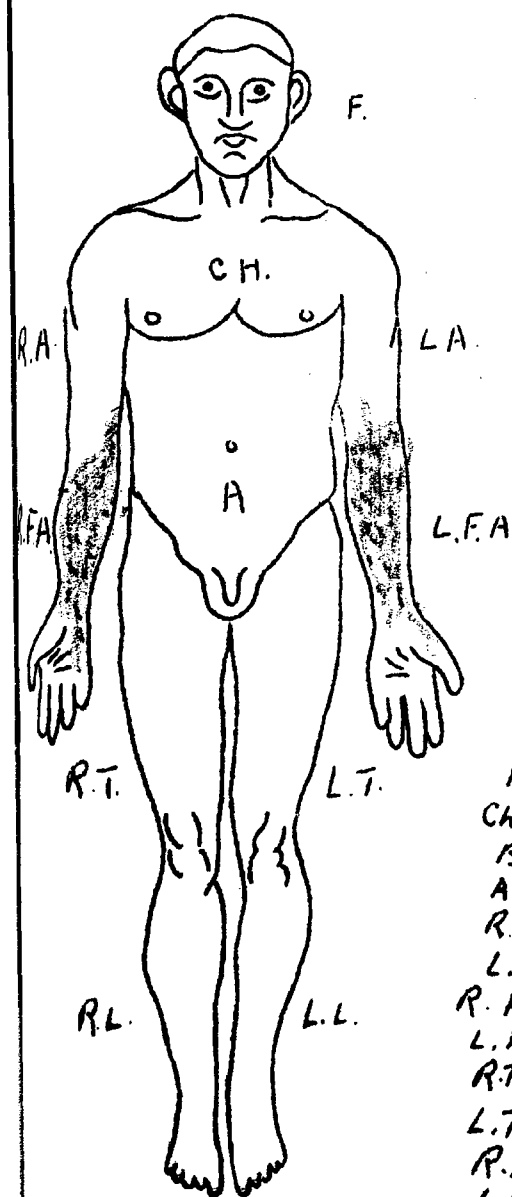
Name. Age. Occupation. Length of Service.
 T.J. (B). 55 yrs. Paraffin sheds. 22½ yrs.

Description of Condition. R.A. & L.A. Extensive eczematous and erythematous dermatitis over forearms, anteriorly and posteriorly. A few papules above elbows. Numerous dry crusts over each forearm.
 Hard papule base of right thumb.
 Scars of healed papules and pustules both arms and forearms.

Group.
IV.

Front.

Back.



H. Head
 F. Face.
 Ch. Chest.
 B. Back.
 A. Abdomen
 R.A. Right Arm
 L.A. Left "
 R.FA. Right Forearm
 L.FA. Left "
 R.T. Right Thigh
 L.T. Left "
 R.L. Right Leg
 L.L. Left leg.

Name. Age. Occupation. Length of Service.
 J.B. (U). 44 yrs Paraffin sheds. 18 yrs.

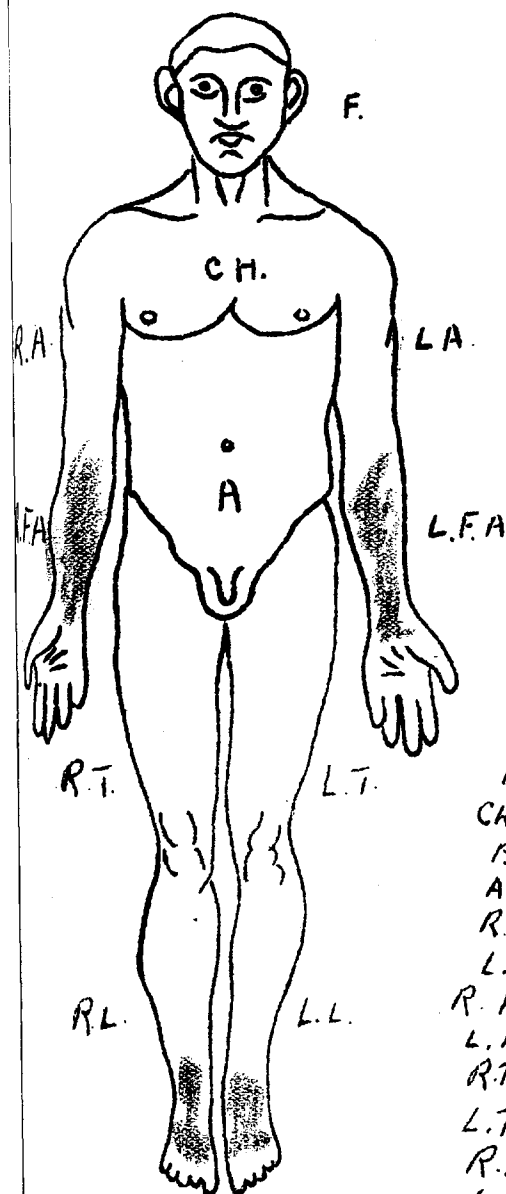
Description of Condition.

R.F.A. Erythem. dermatitis fronts and backs.
 L.F.A. No scales or papules.

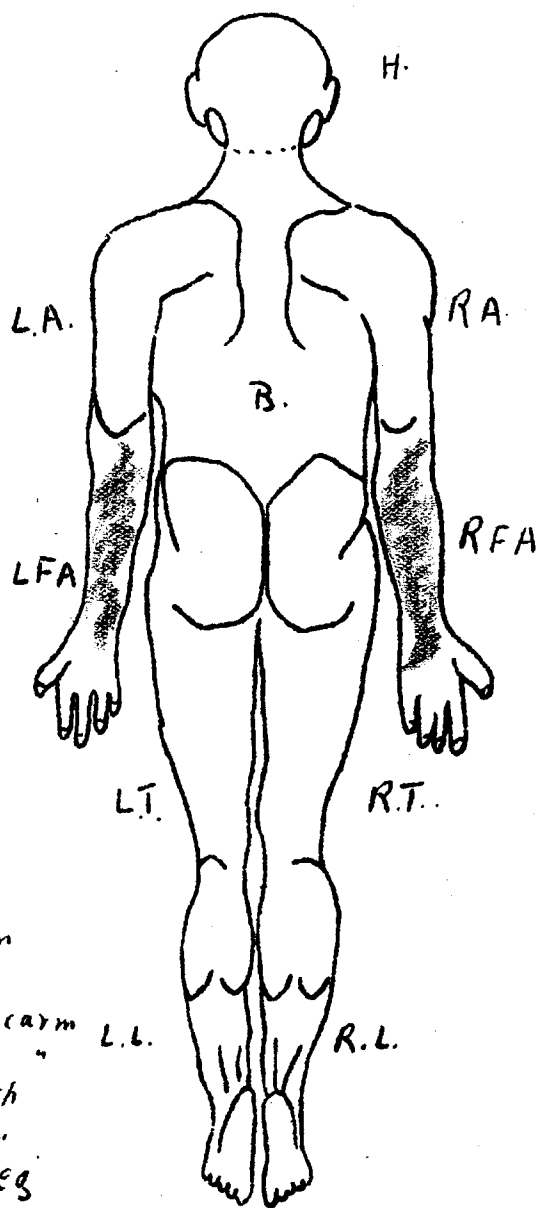
R.L. Erythem. dermatitis both dorsal surfaces of
 L.L. feet. No papules.

Group. IV.

Front.



Back.



- H. Head
- F. Face
- Ch. Chest
- B. Back
- A. Abdomen
- R.A. Right Arm
- L.A. Left "
- R.F.A. Right Forearm
- L.F.A. Left " "
- R.T. Right Thigh
- L.T. Left " "
- R.L. Right Leg
- L.L. Left leg.

Name. Age. Occupation. Length of Service.

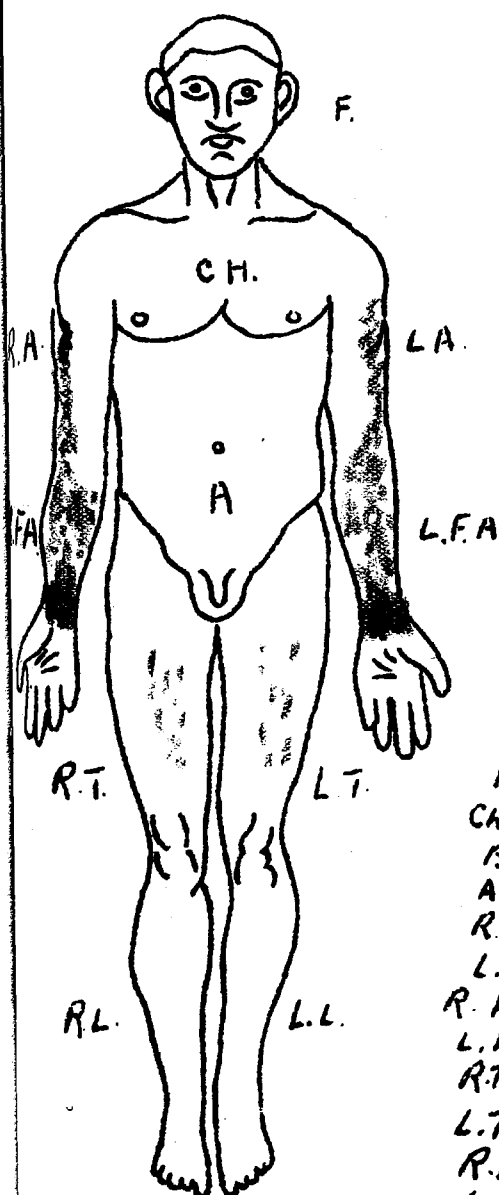
M. (U). 33 yrs. Paraffin sheds. 4 months.

Description of Condition. R.A. (Eryth. dermatitis outer aspect s.
L.A. (eryth. dermatitis fronts and backs.worst
R.F.A. (around wrists. also papules .
L.F.A. (

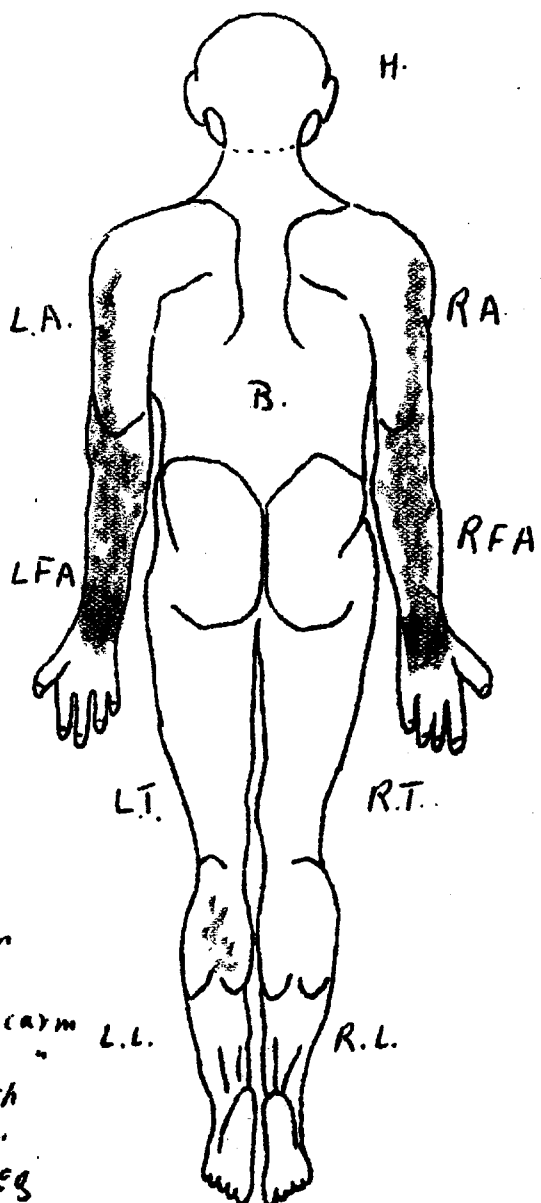
R.L. (small pustules and papules front of both thighs
L.L. (A few small papules left calf.

Group. IV.

Front.



Back.

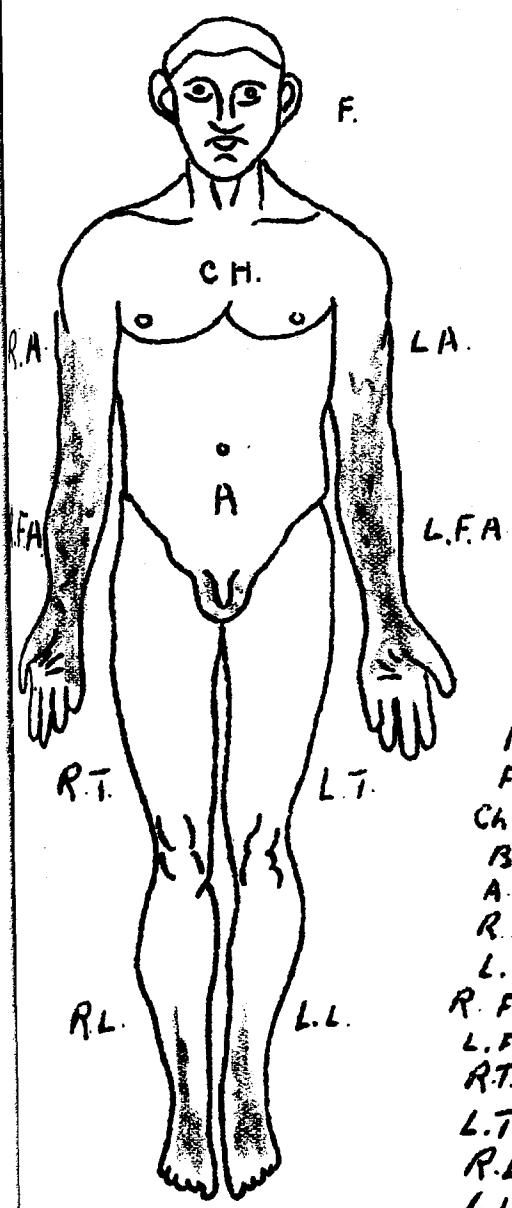


H. Head
F. Face.
Ch. Chest
B. Back
A. abdomen
R.A. Right Arm
L.A. Left "
R.F.A. Right Forearm L.L.
L.F.A. Left " "
R.T. Right Thigh
L.T. Left " "
R.L. Right Leg
L.L. Left leg.

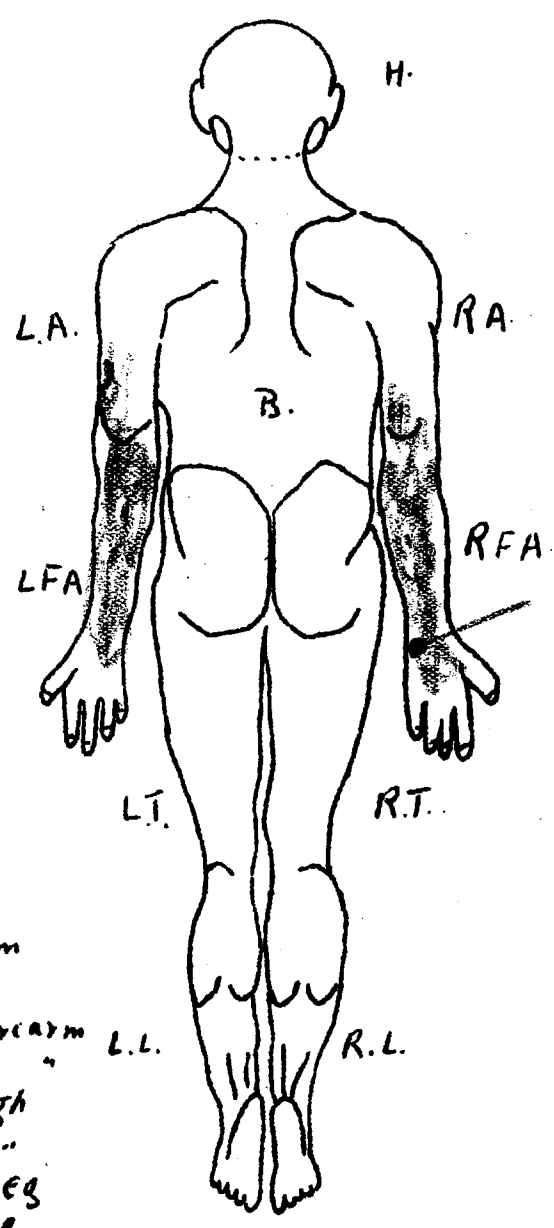
Name. Age. Occupation. Length of Service.
 H. (U). 66 yrs Paraffin sheds 27 yrs.

Description of Condition. R.A. Extensive old healed papular and erythematous dermatitis. A few scars over biceps. R F.A. scaly warts front and back.
 Whole condition in a healing state, no fresh papules
 L.A. Similar to above.
 Feet- slight erythematous dermatitis with warts.
 Scrotum . scars of healed papules.
 B. on dorsum of right hand above wrist, ulnar side is a large papule.
 5 you B. IV.

Front.



Back.



- H. Head
- F. Face.
- Ch. Chest.
- B. Back.
- A. Abdomen
- R.A. Right Arm
- L.A. Left "
- R.F.A. Right Forearm
- L.F.A. Left " "
- R.T. Right Thigh
- L.T. Left " "
- R.L. Right Leg
- L.L. Left leg.

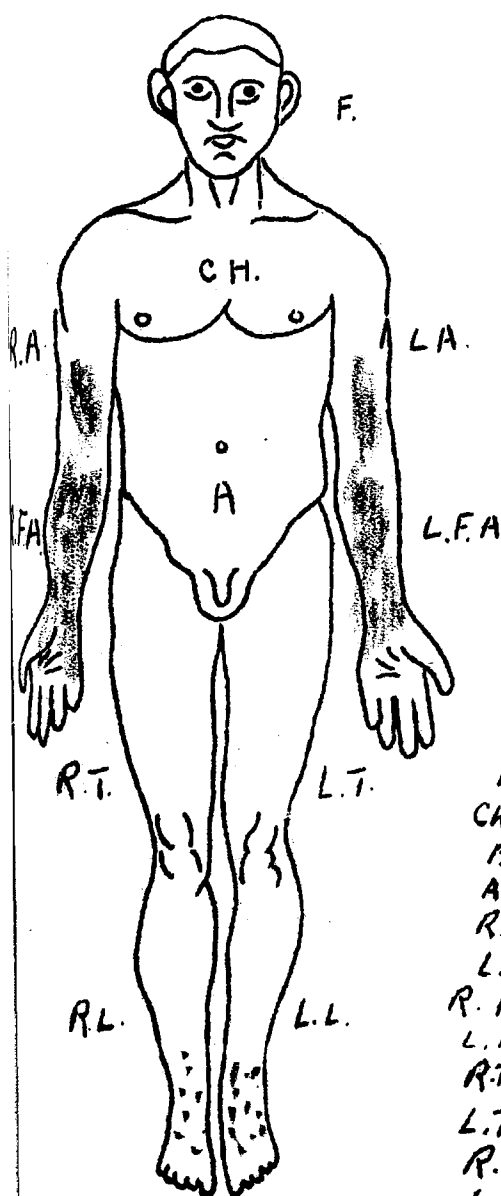
Name.	Age.	Occupation.	Length of Service.
U.S. (U).	50 yrs.	Paraffin sheds.	28 yrs.

Description of Condition. R.A. Over biceps- healed dermatitis.
R.F.A. erythematous dermatitis front and back . numerous small scales

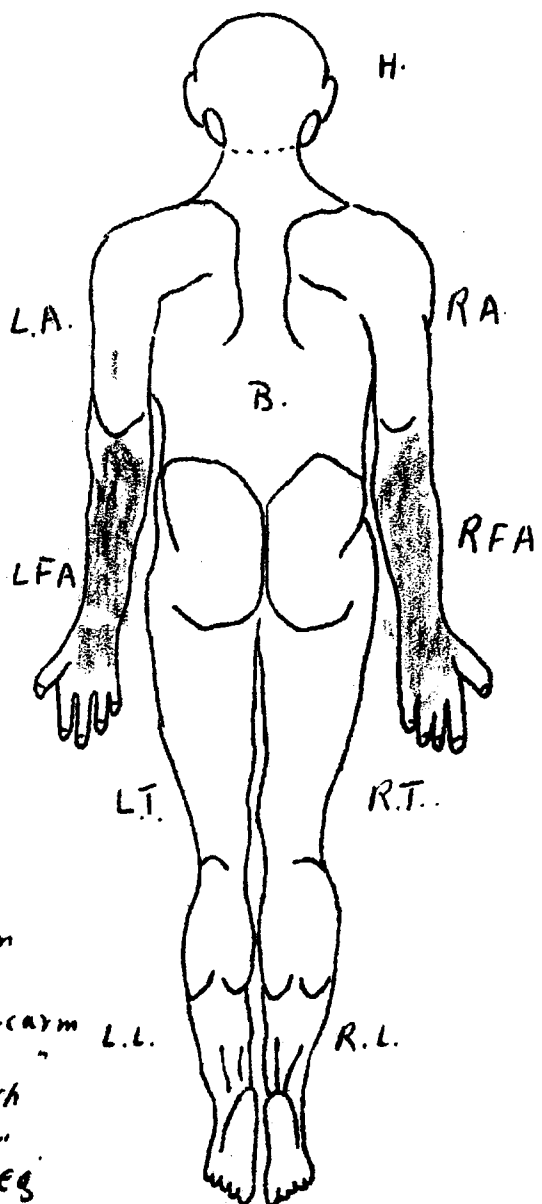
L.A. and L.F.A. as above.
R.L. and L.L. papular dermatitis dorsal aspects, both feet..

Group. IV.

Front.



Back.



H. Head
F. Face.
Ch. Chest.
B. Back.
A. Abdomen
R.A. Right Arm
L.A. Left "
R.F.A. Right Forearm
L.F.A. Left "
R.T. Right Thigh
L.T. Left "
R.L. Right Leg
L.L. Left leg.

Name. Age. Occupation. Length of Service.

A.G. (U). 69 yrs Par. Refinery .(Sweating House), 34 yrs

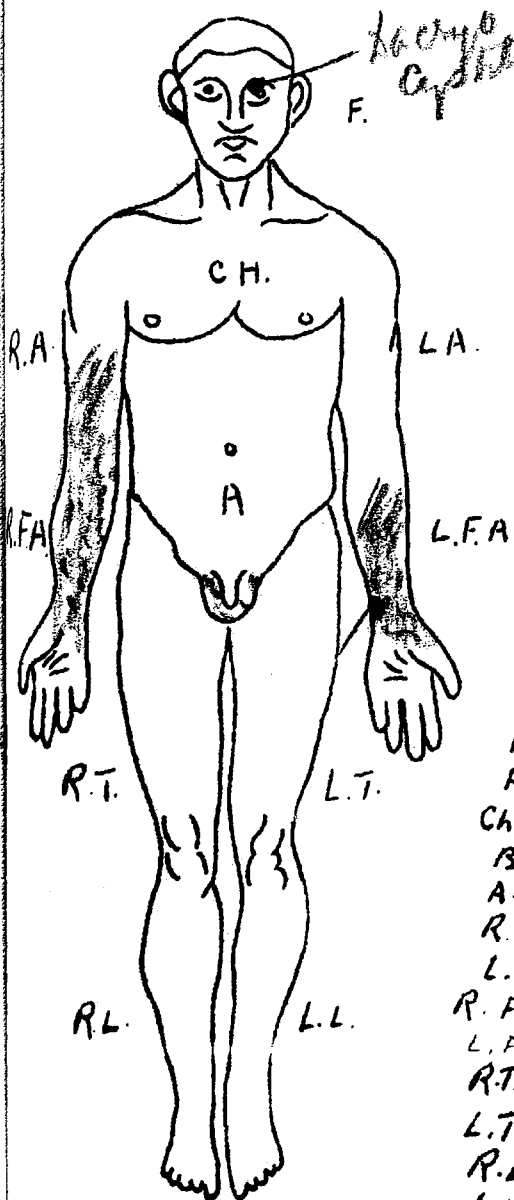
Description of Condition.

F. Inner angle left eye dacryocystitis.
 R.A. Erythemat. dermatitis lower half upper arm .
 R.F.A. " " " " back and front.
 L.F.A. " " " " " " with a few
 papules and pustules. Scaly wart ulnar side of
 wrist.

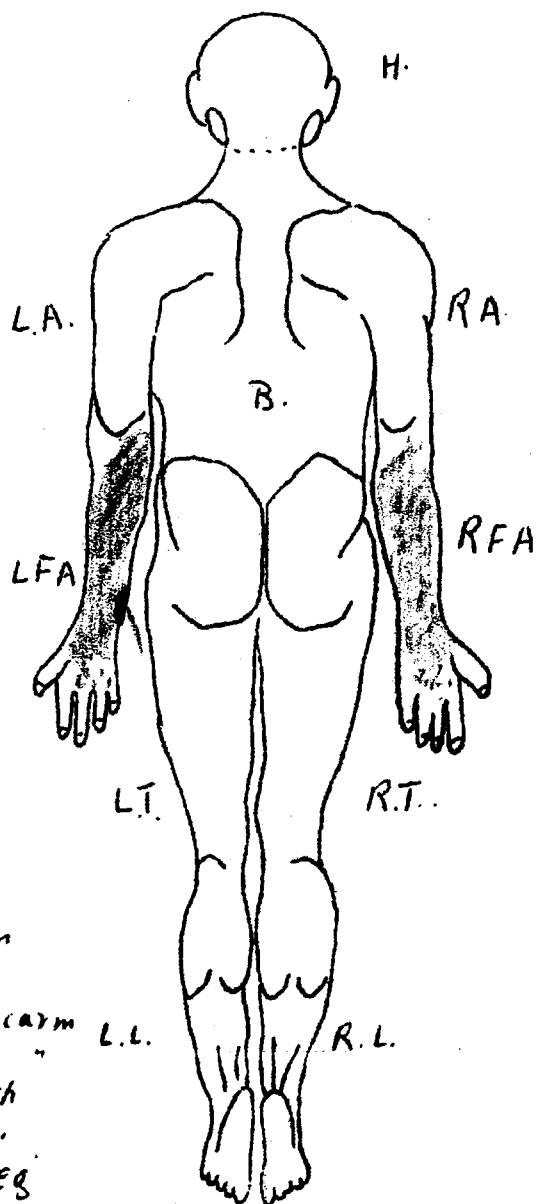
Scrotum - 4 nodules with warty tops.

Group. IV.

Front.



Back.



H. Head
 F. Face.
 Ch. Chest
 B. Back.
 A. Abdomen
 R.A. Right Arm
 L.A. Left " "
 R.F.A. Right Forearm
 L.F.A. Left " "
 R.T. Right Thigh
 L.T. Left " "
 R.L. Right Leg
 L.L. Left leg.

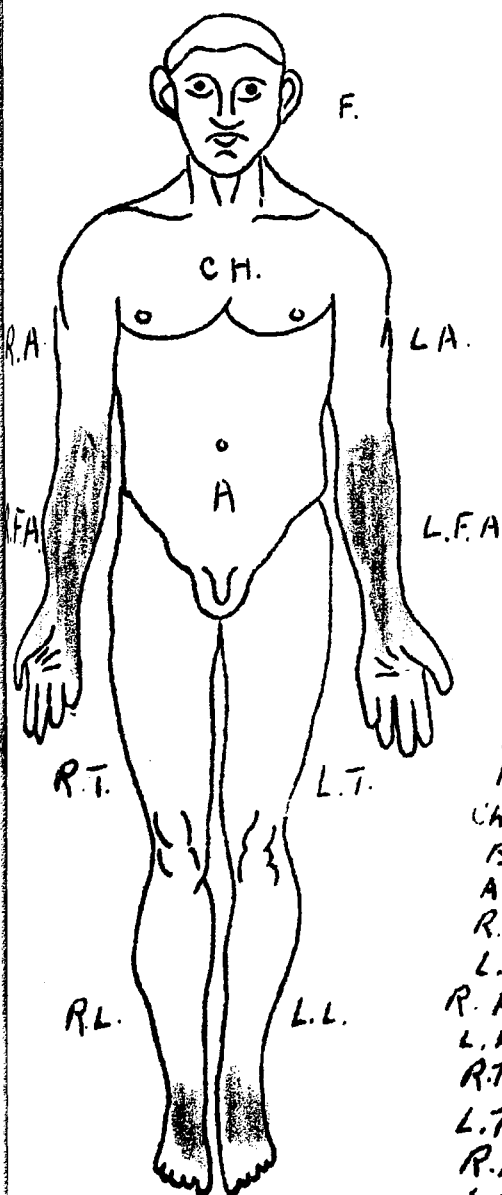
Name. Age. Occupation. Length of Service.
 D.S. (U). 69 yrs. Paraffin sheds. 39 yrs.

Description of Condition. R.F.A. Erythematous dermatitis back and front.
 Healed dermatitis do do .
 No pustules or papules.
 L.F.A. Some erythematous dermatitis.

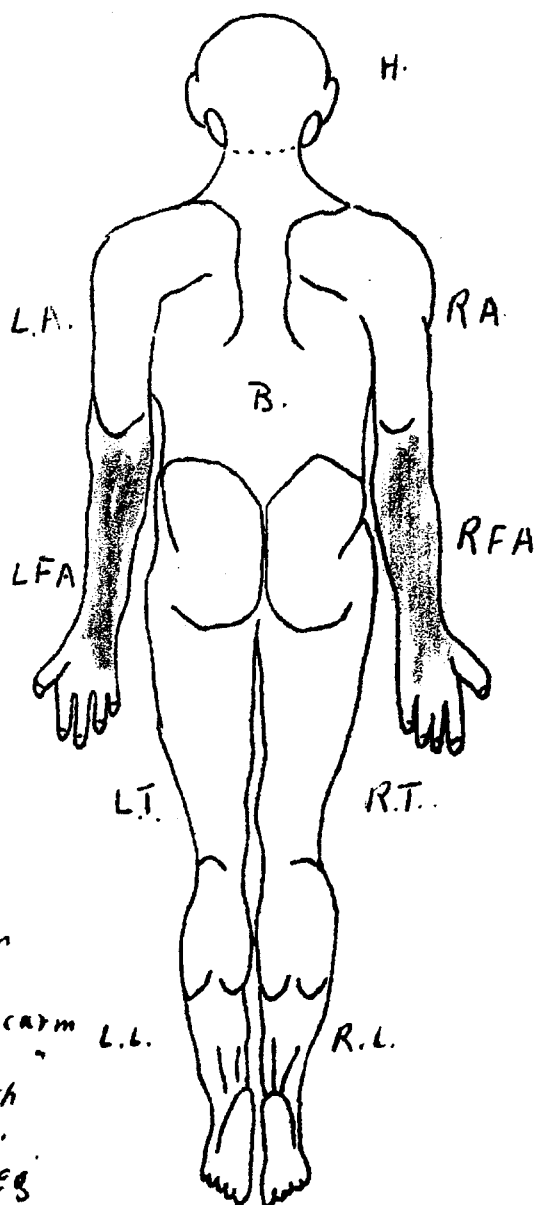
R.L & L.L.---- Slight eryth. dermatitis, both feet, (dorsal aspects).

Group. IV.

Front.



Back.



H. Head
 F. Face.
 CH. Chest.
 B. Back.
 A. Abdomen
 R.A. Right arm
 L.A. Left " "
 R.F.A. Right Forearm
 L.F.A. Left " "
 R.T. Right Thigh
 L.T. Left " "
 R.L. Right Leg
 L.L. Left leg.

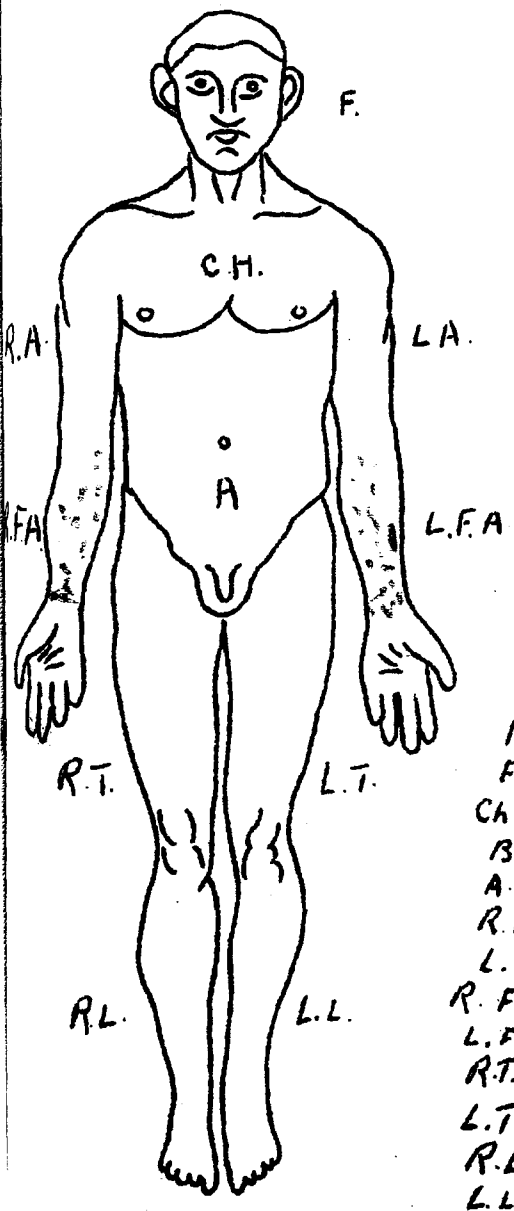
Name. Age. Occupation. Length of Service.

I.G. (P.) 48 Paraffin Sheds. 12 years.

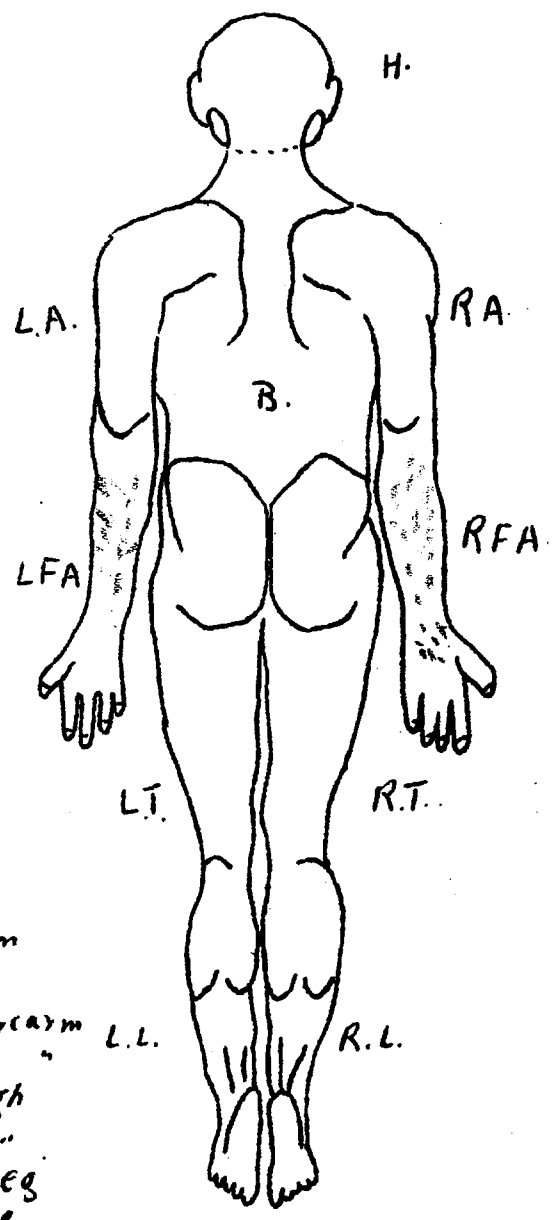
Description of Condition.

R.F.A. Papular dermatitis dorsum of right hand and lower third forearm.
 L.F.A. More extensive papular dermatitis anterior & posterior surfaces, especially round wrist. An old linear cicatrix result of excision of wart or ulcer.
 Group. 4.

Front.



Back.



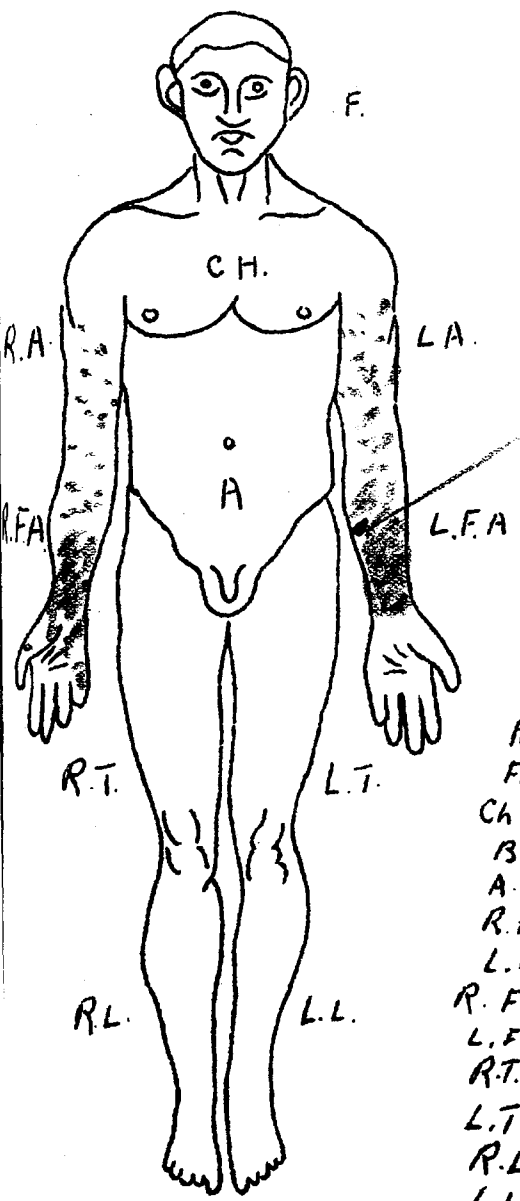
- H. Head
- F. Face.
- CH. Chest
- B. Back.
- A. Abdomen
- R.A. Right Arm
- L.A. Left "
- R.F.A. Right Forearm
- L.F.A. Left " "
- R.T. Right Thigh
- L.T. Left " "
- R.L. Right Leg
- L.L. Left leg.

<u>Name.</u>	<u>Age.</u>	<u>Occupation.</u>	<u>Length of Service.</u>
(P.).	46 years.	Paraffin Sheds.	10 years.

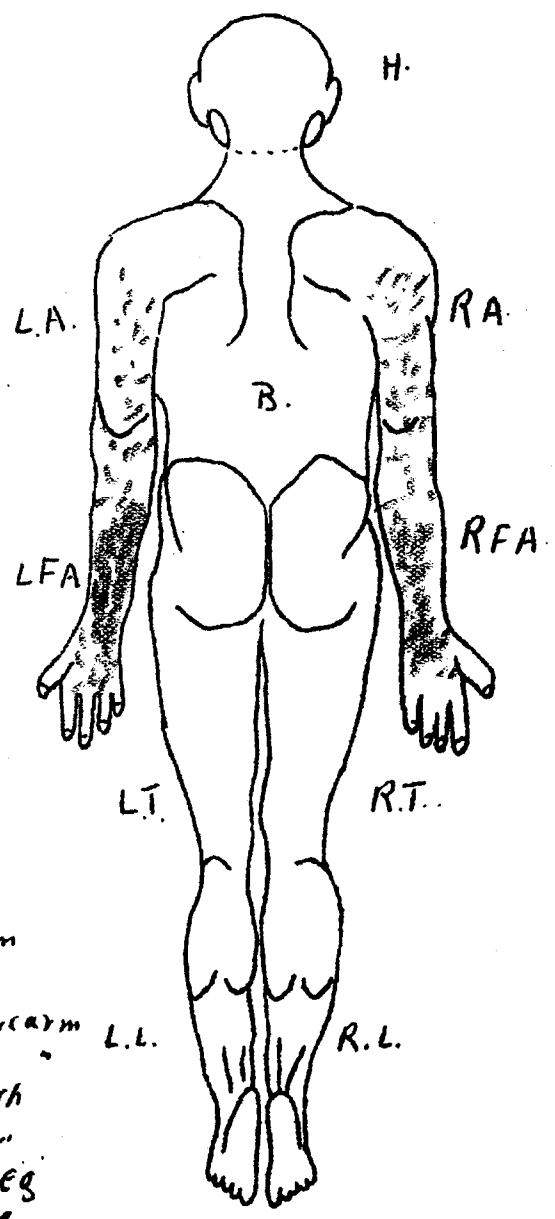
Description of Condition. Erythematous dermatitis lower third both forearms anteriorly, and posteriorly. Numerous papules over hands, arms, and forearms.
 L.F.A. Large papule ulnar border.

Group. 4.

Front.



Back.



- H. Head
- F. Face
- Ch. Chest
- B. Back
- A. Abdomen
- R.A. Right Arm
- L.A. Left "
- R.F.A. Right Forearm
- L.F.A. Left "
- R.T. Right Thigh
- L.T. Left "
- R.L. Right Leg
- L.L. Left leg.

Name. Age. Occupation. Length of Service.

Ed Wallace. (O) 34 years. Greensheds. 16 years

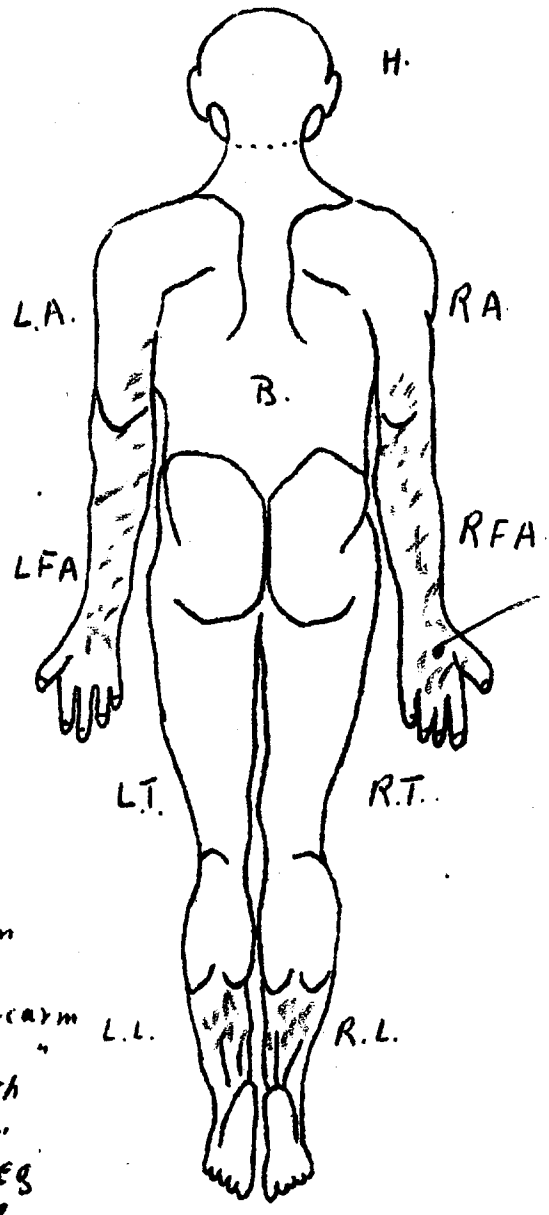
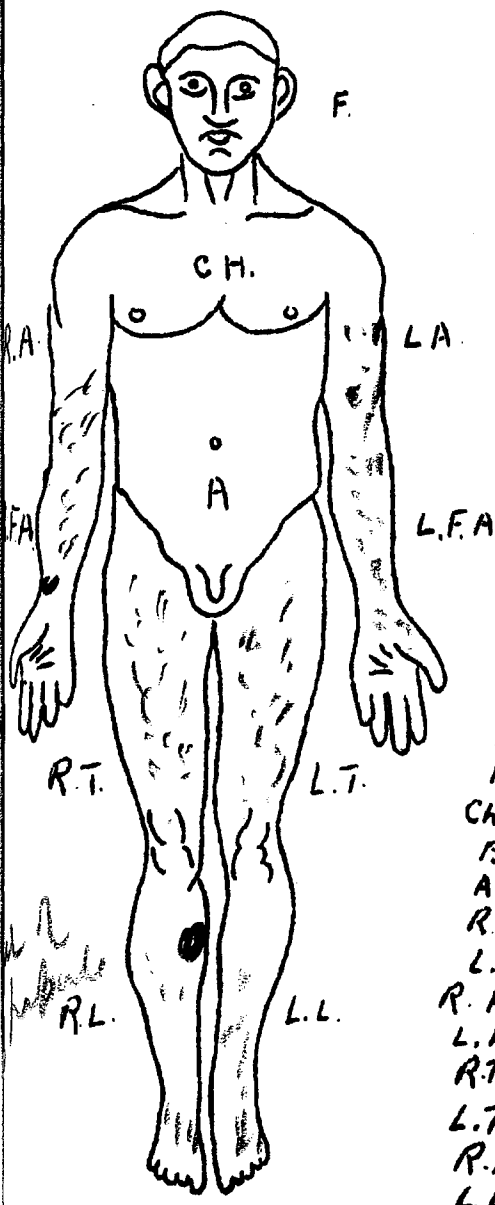
Description of Condition. R.F.A. & L.F.A. old papular and indurated eryth. dermatitis back & front. On L.F.A. large papules back of hand, behind wrist, on middle of forearm radial side anteriorly.

R.F.A. large papules radial side of hand behind and one anteriorly indurated eryth, dermatitis lower thirds arms.
 R. & L.T. old indurated eryth. dermatitis anteriorly.
 R. & L.L. papular and eryth. dermatitis lower thirds and over feet.
 right leg; large scar of healing papule to inside below knee.

Front.

Back.

4.



- H. Head
- F. Face
- Ch. Chest
- B. Back
- A. Abdomen
- R.A. Right Arm
- L.A. Left "
- R.F.A. Right Forearm
- L.F.A. Left " "
- R.T. Right Thigh
- L.T. Left " "
- R.L. Right Leg
- L.L. Left leg.

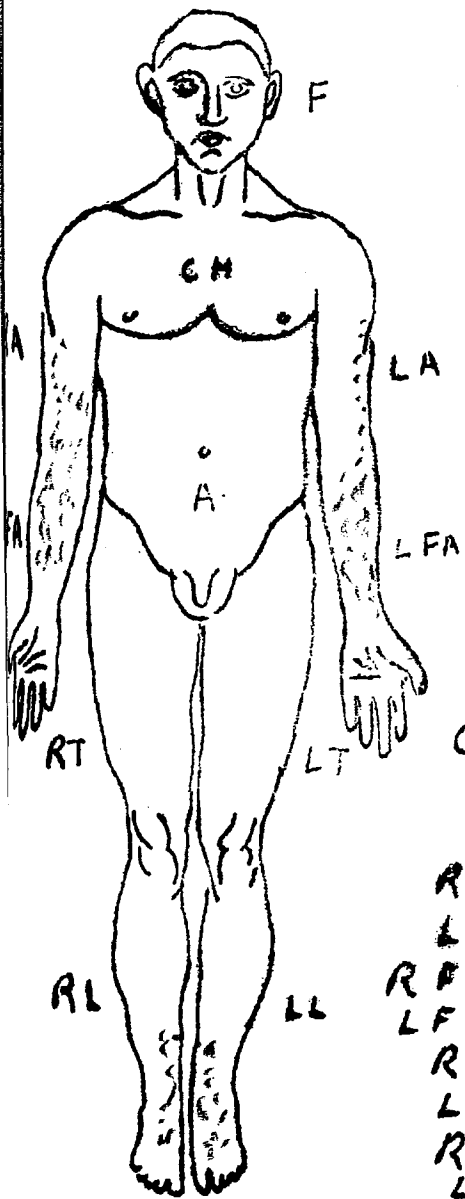
name. Age. Occupation Length of Service

Dalziel, (D) 48 yrs. Greensheds 8½ yrs.

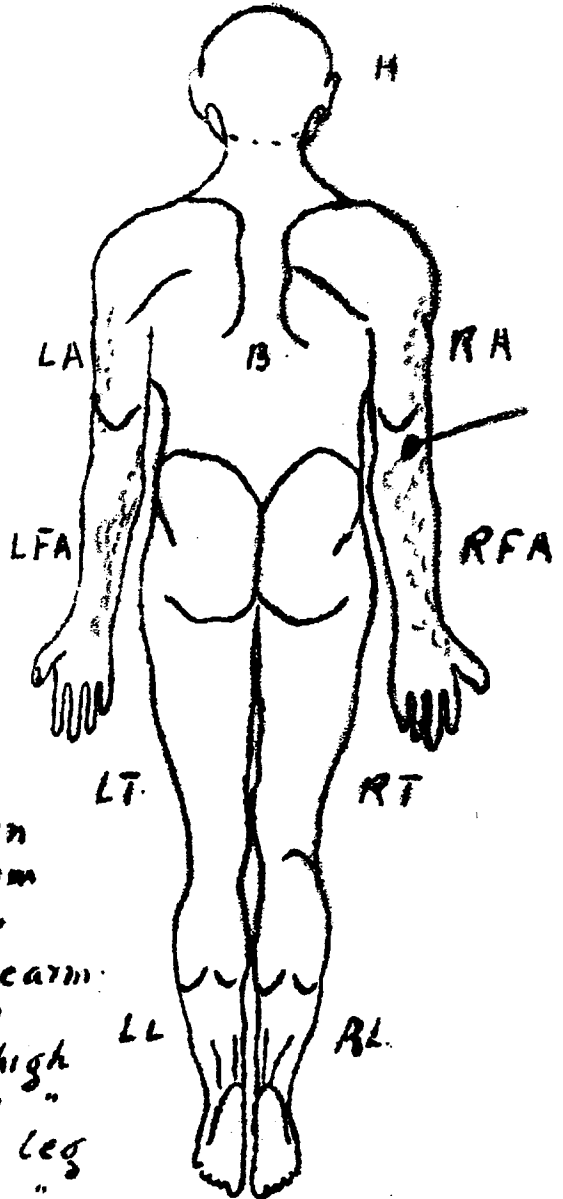
Condition old indurated eryth. dermatitis baaks and fronts of both arms and forearms.
 Condition. R.F.A. 3" below elbow behind a large papule requiring to be kept under observation.
 Collicular dermatitis dorsi of feet. and toes.

Group 4.

Front



Back.



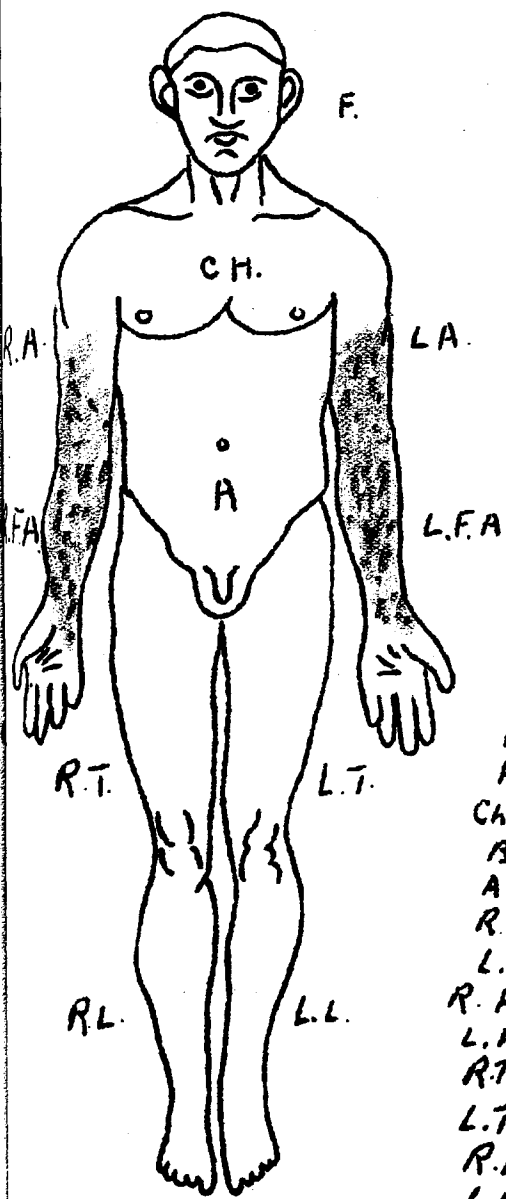
- H.- Head
- F. Face
- Ch. Chest.
- B. Back.
- A. Abdomen
- RA. Right Arm
- LA. Left "
- RFA. Right Forearm.
- LFA. Left "
- RT. Right Thigh
- LT. Left " "
- RL. Right Leg
- LL. Left " "

<u>Name.</u>	<u>Age.</u>	<u>Occupation.</u>	<u>Length of Service.</u>
R.S. (O).	55 yrs	Paraffin sheds.	14 yrs.

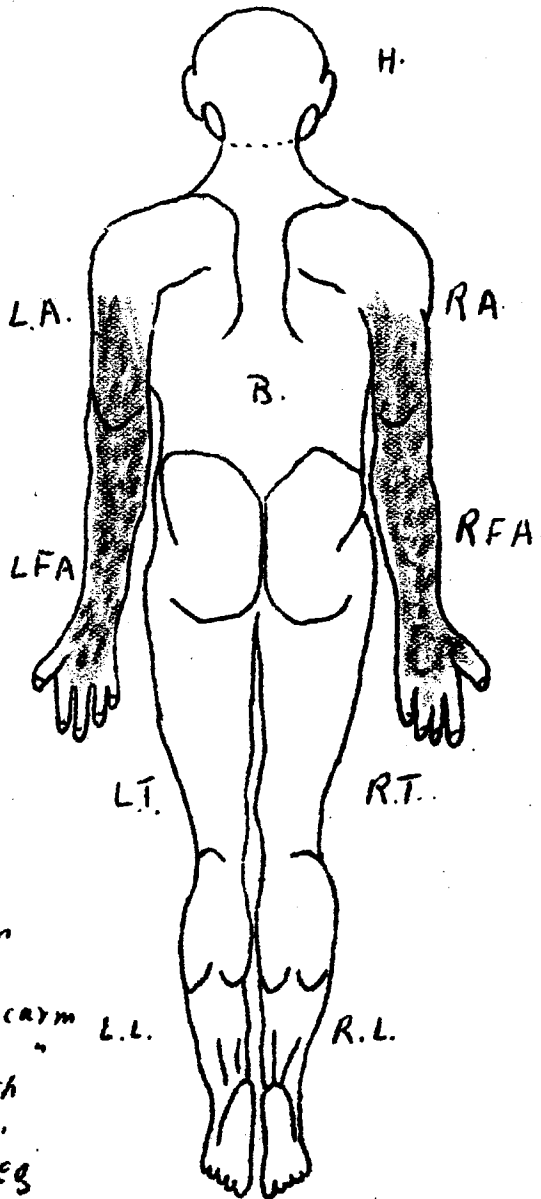
Description of Condition. R.A. erythem. dermatitis lower 2 thirds., also some papules.
 R.F.A.- erythem. and papular dermatitis backs and fronts.
 L.F.A. an illa. extensive papular and erythem. dermatitis over lower half. ditto over forearm, both front and back.
 several warty papules front and back L.F.A.

Group. IV.

Front.



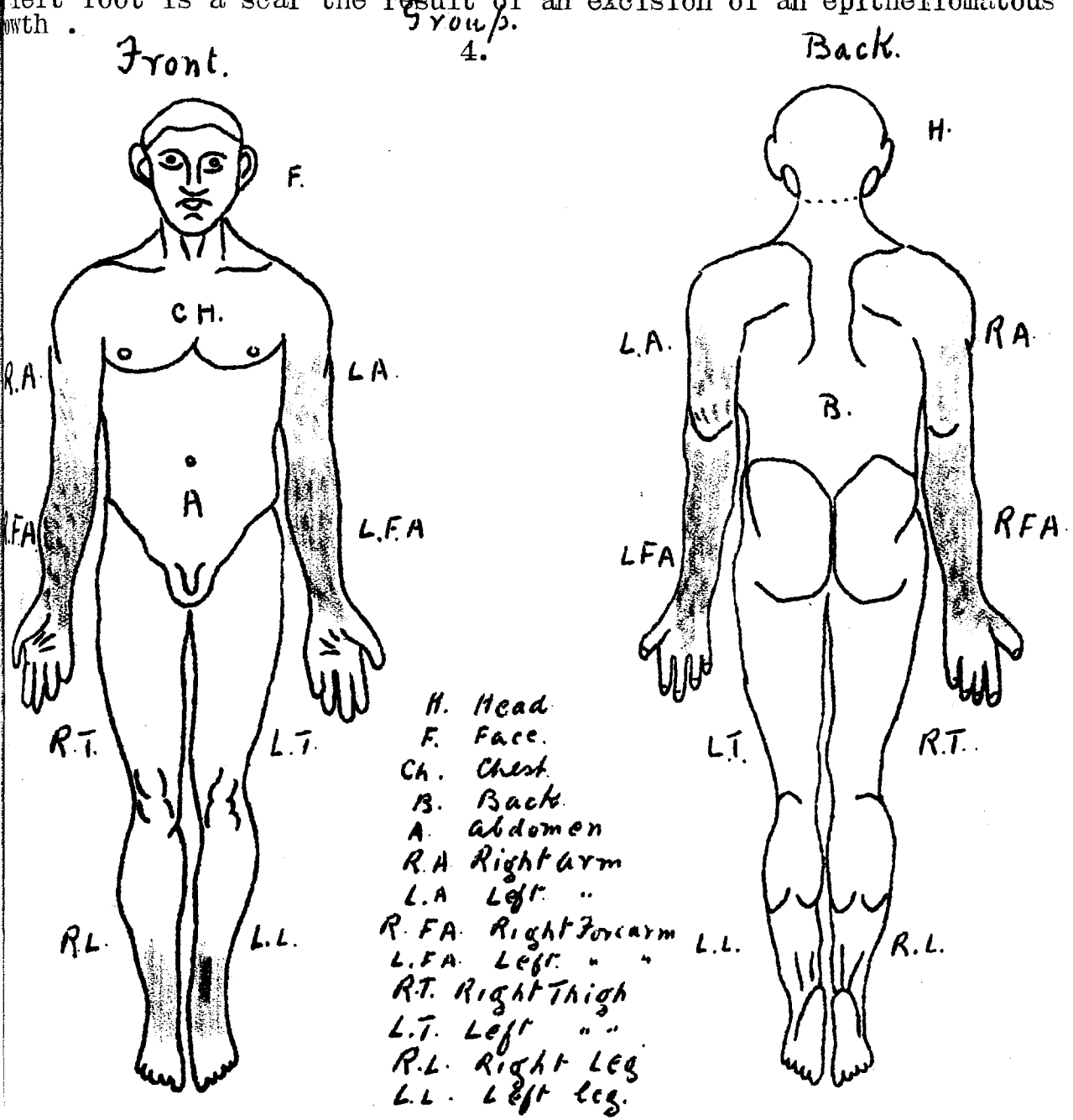
Back.



- H. Head
- F. Face.
- Ch. Chest
- B. Back
- A. Abdomen
- R.A. Right Arm
- L.A. Left "
- R.F.A. Right Forearm
- L.F.A. Left " "
- R.T. Right Thigh
- L.T. Left " "
- R.L. Right Leg
- L.L. Left leg.

Name. L. (O). Age. 45 yrs. Occupation. Paraffin sheds. Length of Service. 22 yrs.

Description of Condition. R.A. Dry scaly dermatitis more or less healed.
 R.F.A. Diffuse erythem. dermatitis and papular dermatitis.
 L.A. healed dermatitis above elbow.
 R.A. diffuse erythem. and papular dermatitis, especially over back of wrist. To outer side of wrist are numerous scaly warts., covered with crusts, a number of scars of healed pustular dermatitis.
 and L.L.- erythem. dermatitis dorsi of feet and on front of ankles.
 left foot is a scar the result of an excision of an epitheliomatous growth.



Name. Age. Occupation. Length of Service.

J.B. (O). 66 yrs Paraffin sheds

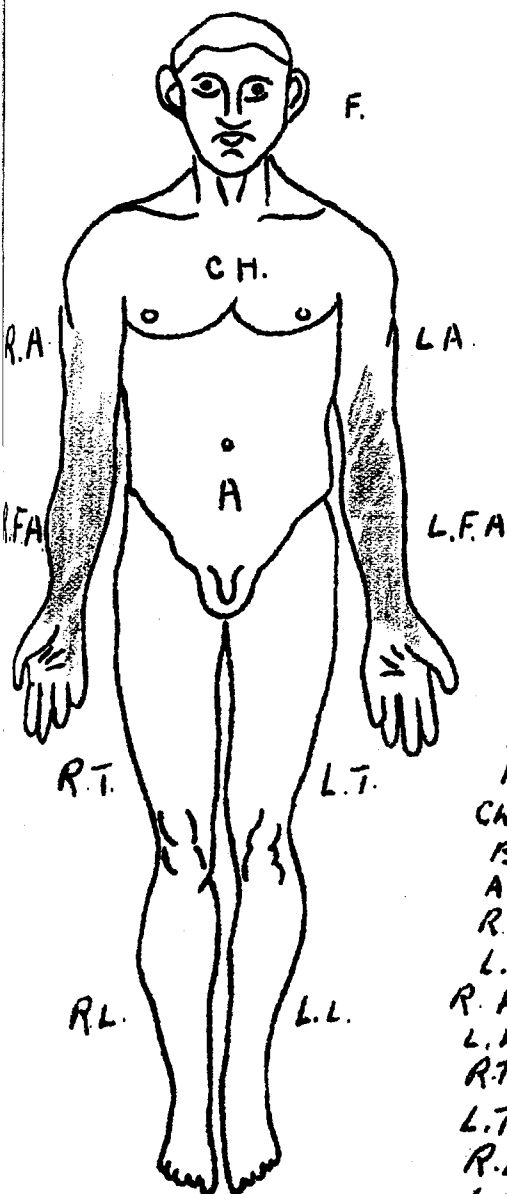
30 yrs.

Description of Condition. R.F.A. diffuse erythem. dermatitis front and back. behind elbow are 2 ulcerating nodules, each as large as a sixpence, evidently assuming larger proportions which while not at present malignant, may become so.

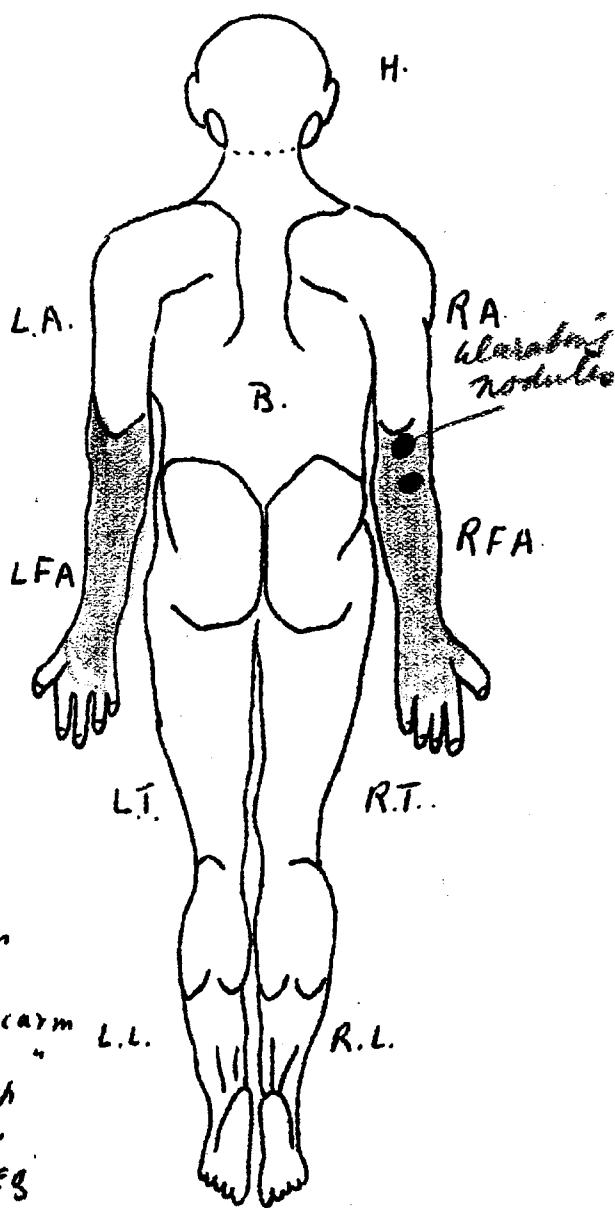
L.F.A. erythem. dermatitis front and back.

Group. IV.

Front.



Back.



- H. Head
- F. Face.
- CH. Chest.
- B. Back.
- A. Abdomen
- R.A. Right Arm
- L.A. Left "
- R.F.A. Right Forearm
- L.F.A. Left " "
- R.T. Right Thigh
- L.T. Left " "
- R.L. Right Leg
- L.L. Left leg.

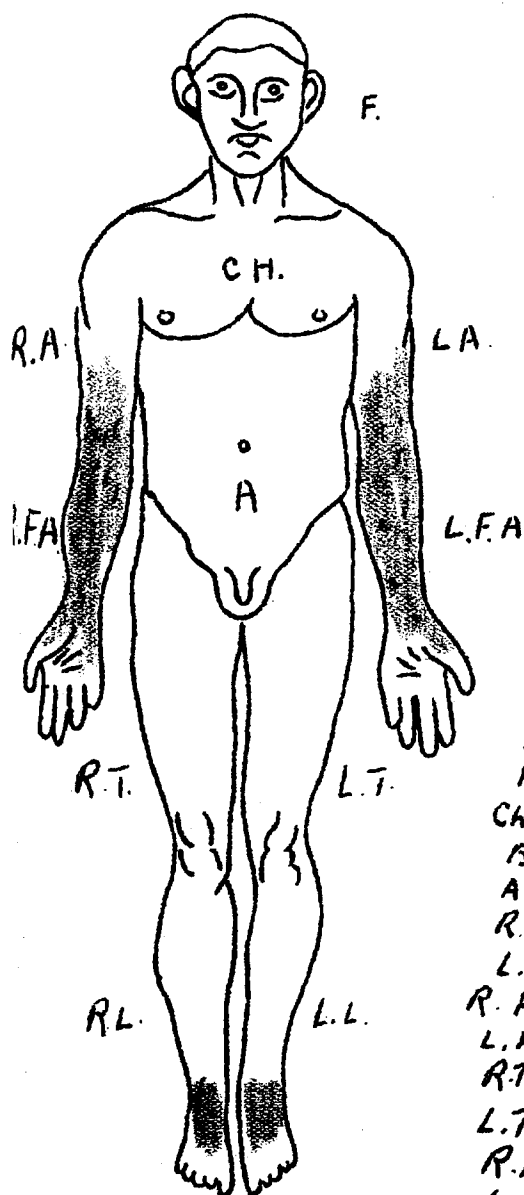
<u>Name.</u>	<u>Age.</u>	<u>Occupation.</u>	<u>Length of Service.</u>
E. O'H. (A).	43 yrs.	Paraffin Sheds. Sweating	21 yrs.

Description of Condition. R.A. and L.A. Erythem. dermatitis lower thirds anterior aspects.
R.F.A. and L.F.A. Eryth. dermatitis anterior and posterior surfaces. Warty papules dorsi of wrists, and horny papules dorsi of both hands.

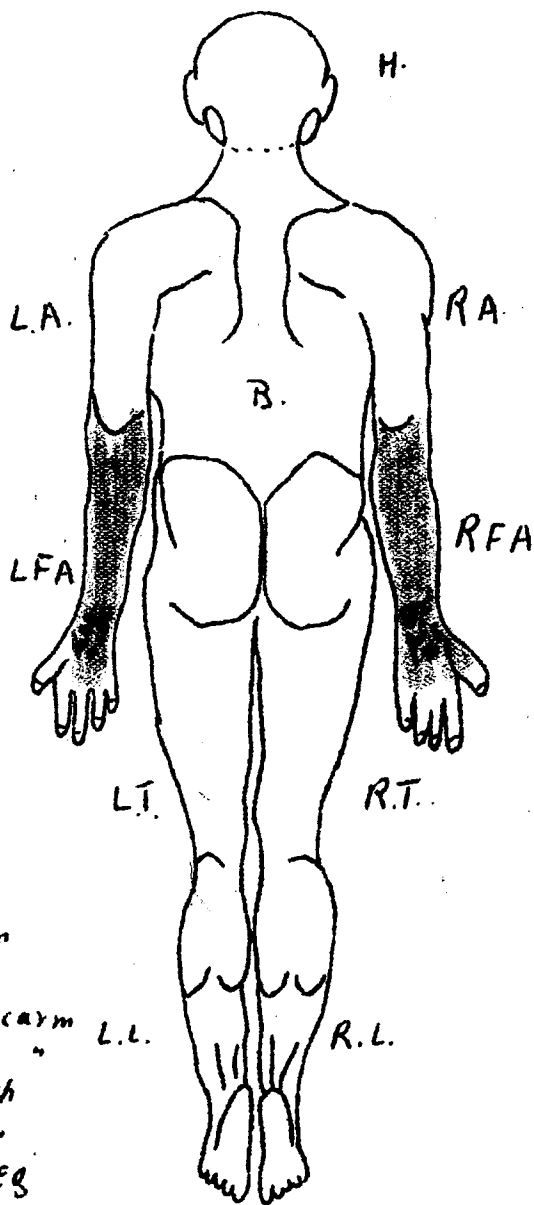
Feet. — Eryth. dermatitis dorsi of both feet.

Group. 4.

Front.



Back.



H. Head
F. Face
CH. Chest
B. Back
A. Abdomen
R.A. Right Arm
L.A. Left "
R.F.A. Right Forearm
L.F.A. Left "
R.T. Right Thigh
L.T. Left "
R.L. Right Leg
L.L. Left leg

Name. Age. Occupation. Length of Service.
 M.J. (A). 59 yrs. ~~Parson~~ Sheds . 33 yrs.
 Sweating

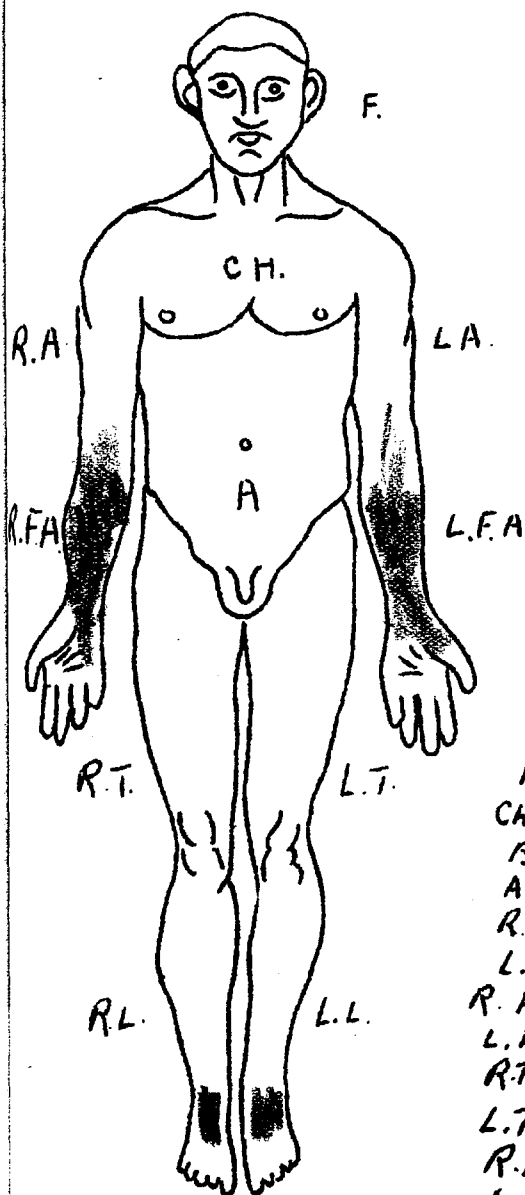
Description of Condition.

R.F.A. and L.F.A. Extensive old indurated erythematous dermatitis, dorsal and anterior surfaces, Also some small papules.

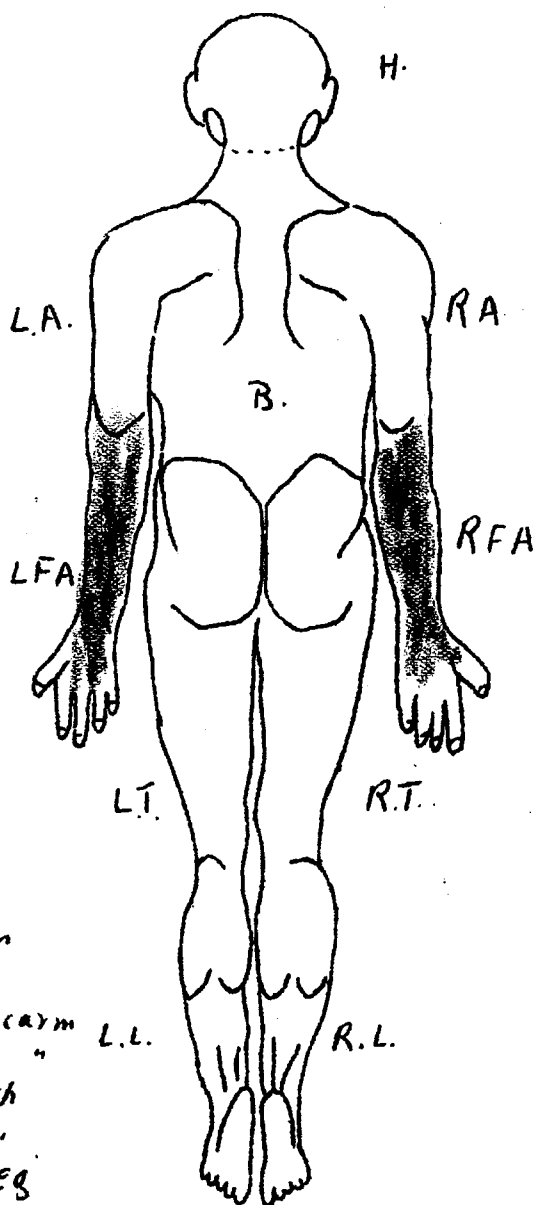
Erythem. dermatitis dorsi of feet.

Group. 4.

Front.



Back.



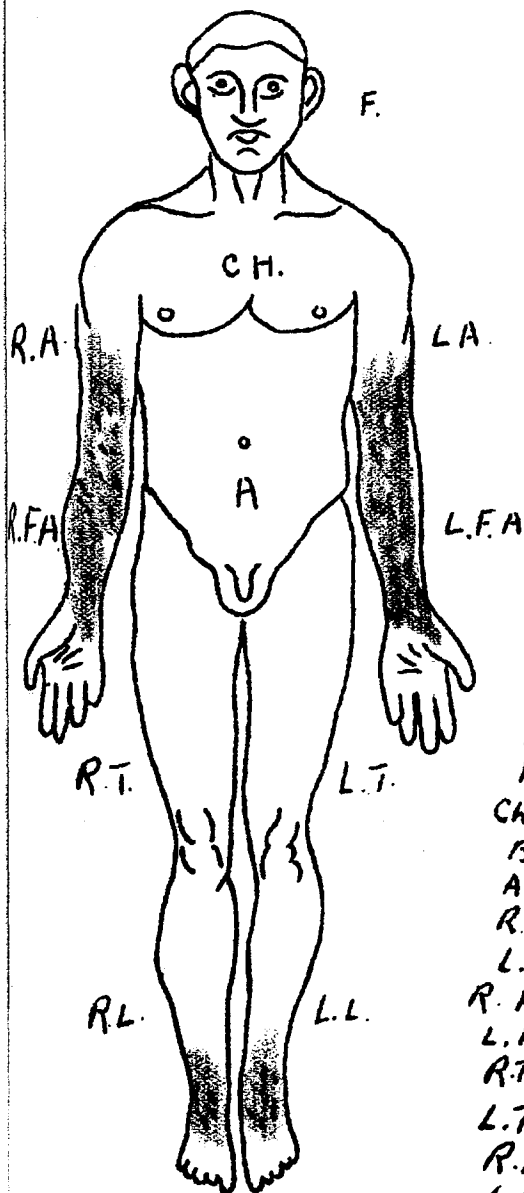
- H. Head
- F. Face
- CH. Chest
- B. Back
- A. Abdomen
- R.A. Right Arm
- L.A. Left "
- R.F.A. Right Forearm
- L.F.A. Left " "
- R.T. Right Thigh
- L.T. Left " "
- R.L. Right Leg
- L.L. Left leg

<u>Name.</u>	<u>Age.</u>	<u>Occupation.</u>	<u>Length of Service.</u>
M.G. (A).	39 yrs.	Paraffin Sheds .	22 yrs.

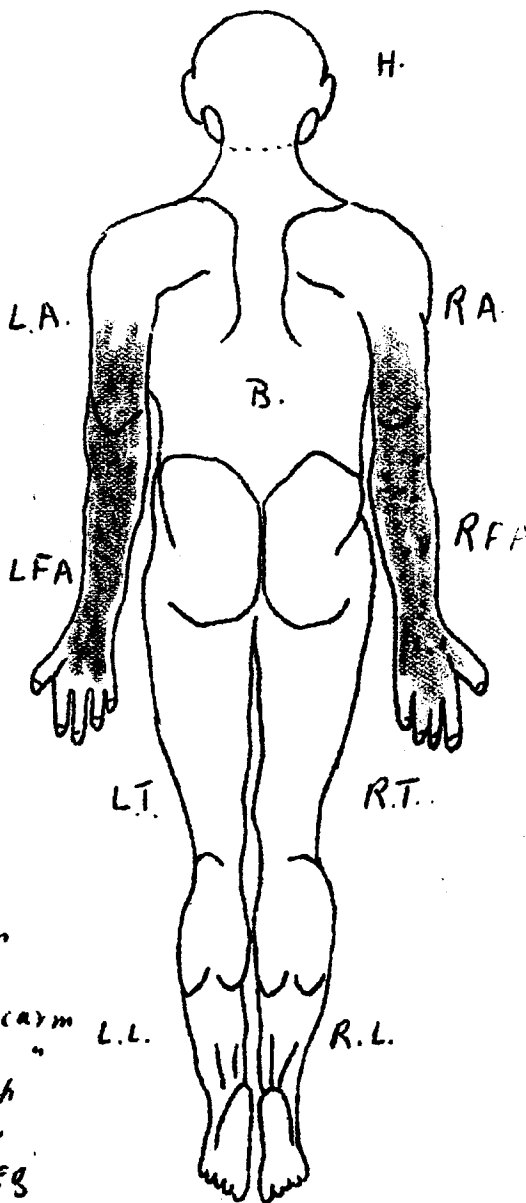
Description of Condition. R.A. and L.A. Papular dermatitis lower halves anterior and posterior surfaces.
 R.F.A. & L.F.A. - Erythematous dermatitis anterior and posterior aspects. .. several nodules dorsii of both hands. papular dermatitis dorsii of both hands.
 L.L.-R.L.-Erythematous dermatitis dorsii of both ankles.

Group. 4.

Front.



Back.



- H. Head
- F. Face
- Ch. Chest
- B. Back
- A. Abdomen
- R.A. Right Arm
- L.A. Left "
- R.F.A. Right Forearm
- L.F.A. Left " "
- R.T. Right Thigh
- L.T. Left " "
- R.L. Right Leg
- L.L. Left leg.

1.B. (A). 57 years.. Paraffin Sheds. 29 years.

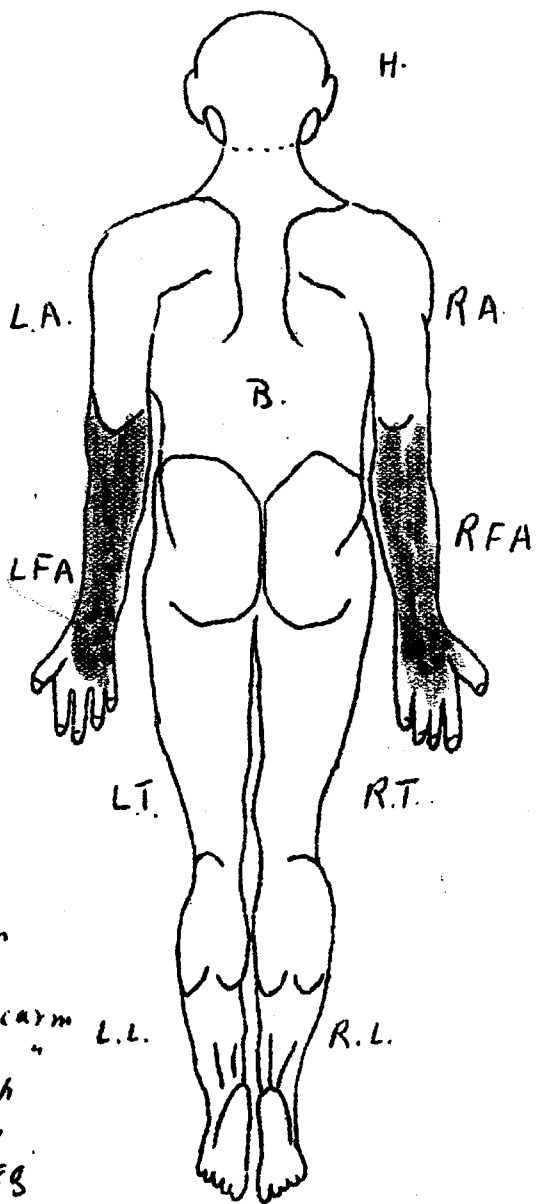
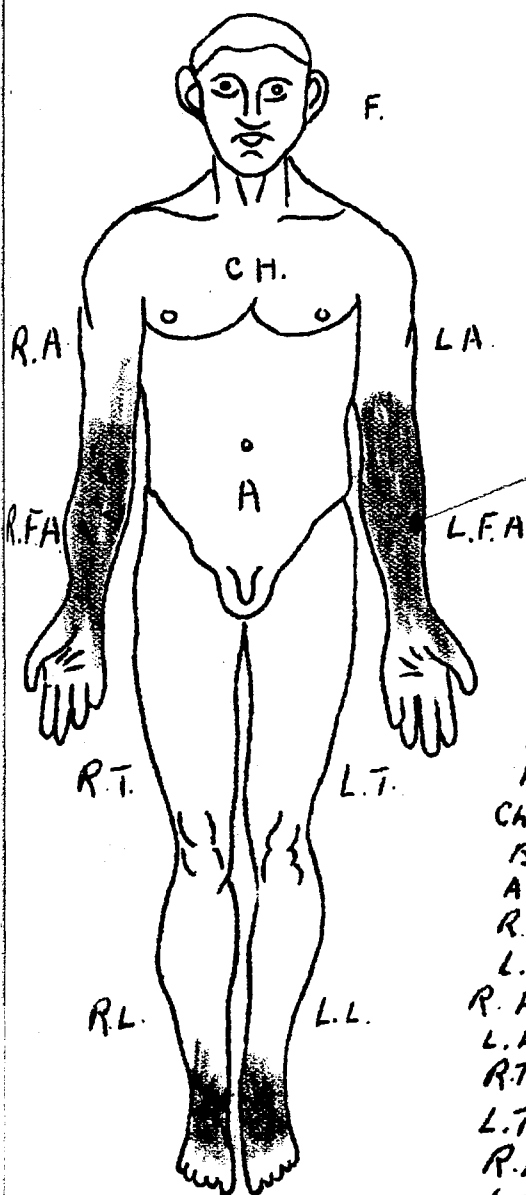
Description of Condition.	R.F.A. and L.F.A. -- Extensive indurated erythematous dermatitis, front & backs.
	Large pustular warts dorsi of both hands. Several large indurated warts over back of left wrist, showing signs of growth. (To be kept under observation)

Erythem. dermatitis both feet; with numerous papules and warty growths. ,

5 You p. 4.

Front.

Back.



- H. Head
F. Face
Ch. Chest
B. Back
A. Abdomen
R.A. Right Arm
L.A. Left "
R.F.A. Right Forearm L.L.
L.F.A. Left " "
R.T. Right Thigh
L.T. Left " "
R.L. Right Leg
L.L. Left leg

<u>Name.</u>	<u>Age.</u>	<u>Occupation.</u>	<u>Length of Service.</u>
V.C. (A).	63 yrs.	Paraffin Sheds.	38 yrs.

Description of Condition.

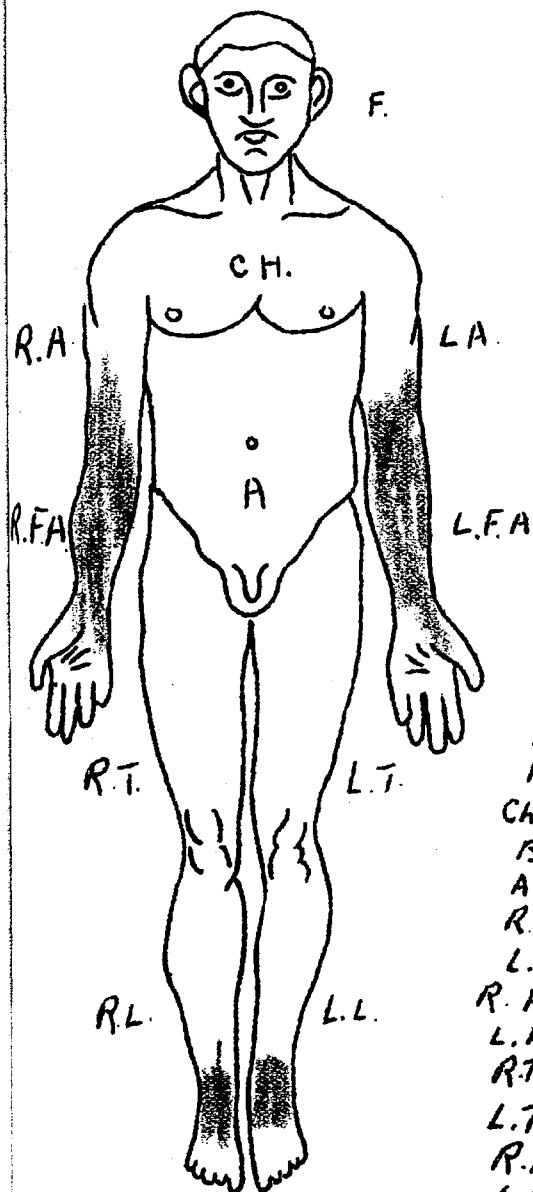
R.A. and L.A. erythematous dermatitis lower thirds.

R.F.A. and L.F.A. Extensive eryth, dermatitis fronts and backs

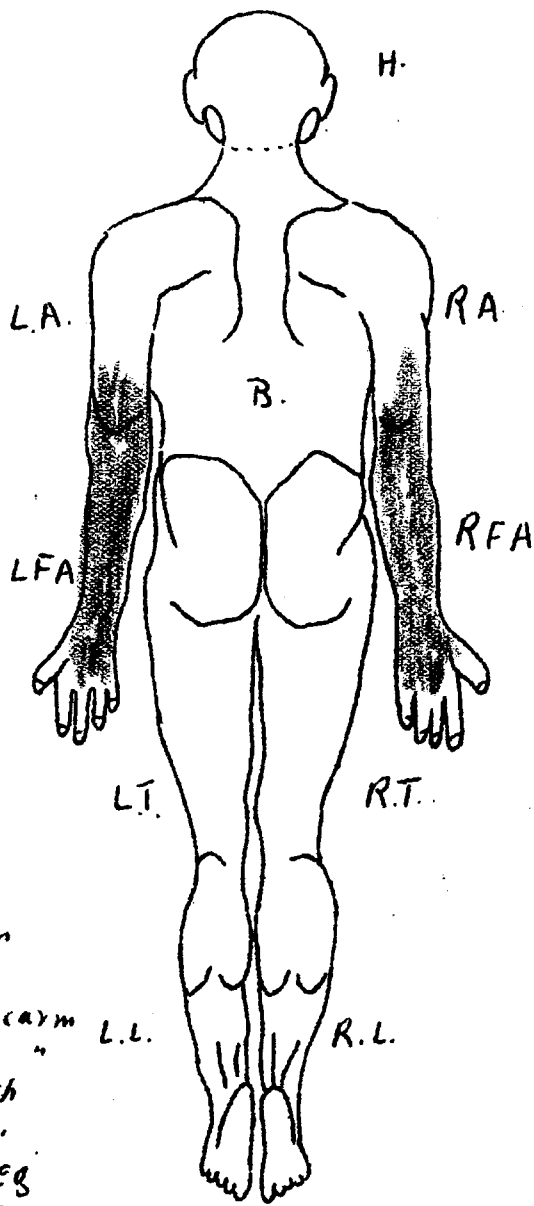
Eryth, dermatitis dorsal surfaces both feet.

Group. 4.

Front.



Back.



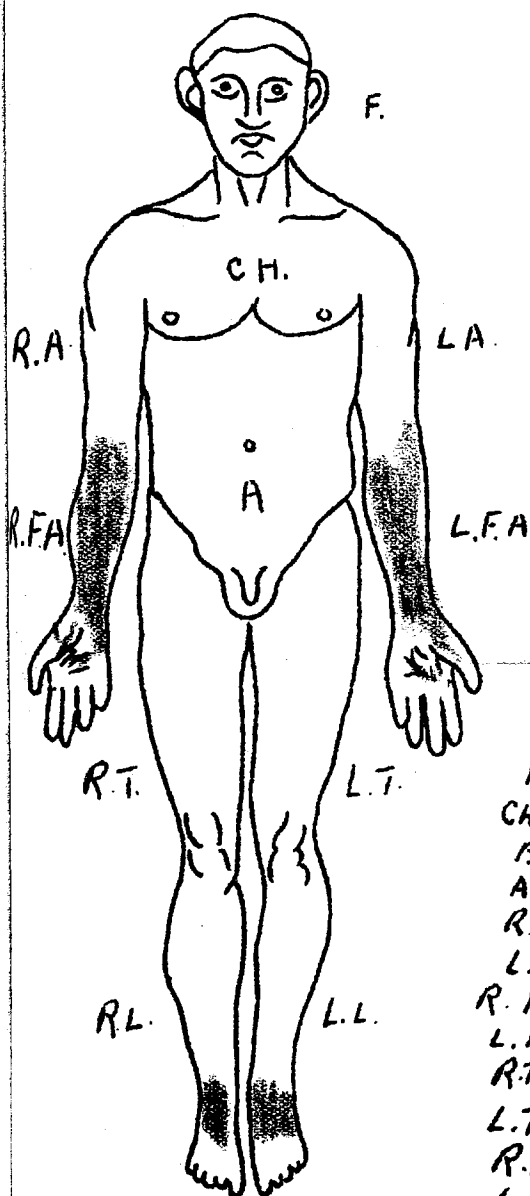
- H. Head
- F. Face
- CH. Chest
- B. Back
- A. Abdomen
- R.A. Right Arm
- L.A. Left "
- R.F.A. Right Forearm
- L.F.A. Left " "
- R.T. Right Thigh
- L.T. Left " "
- R.L. Right Leg
- L.L. Left leg.

<u>Name.</u>	<u>Age.</u>	<u>Occupation.</u>	<u>Length of Service.</u>
I.B. (A).	45 yrs.	Paraffin Sheds.	15 yrs.

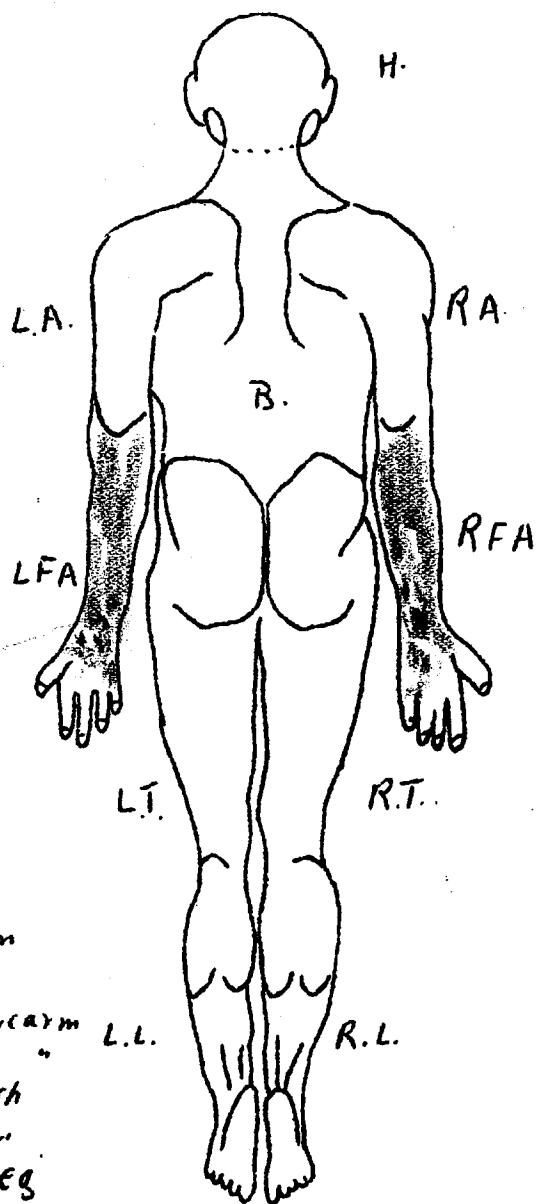
Description of Condition. R.F.A. & L.F.A. Erythematous dermatitis dorsal and anterior surfaces both forearms, right being worse. Numerous ordinary warts on both hands (not due to paraffin wax).
L.L. & R.L. erythematous dermatitis dorsi both feet.

Group. 4.

Front.



Back.



H. Head
F. Face
CH. Chest
B. Back
A. Abdomen
R.A. Right Arm
L.A. Left "
R.F.A. Right Forearm L.L.
L.F.A. Left " "
R.T. Right Thigh
L.T. Left " "
R.L. Right Leg
L.L. Left leg.

GROUP 5:-

Those showing any condition approaching
Malignancy.

Name.

Age.

Occupation.

Length of Service

J.G. (J).

73 years

Sweating sheds.

30 years

Description of Condition

Extensive healed and healing erythematous dermatitis of both forearms, numerous warts, white areas, scars and pigmented patches. Note. One large papillomatous growth, on radial aspect of right forearm the size of half a crown with large central necrotic area and formation of a deep

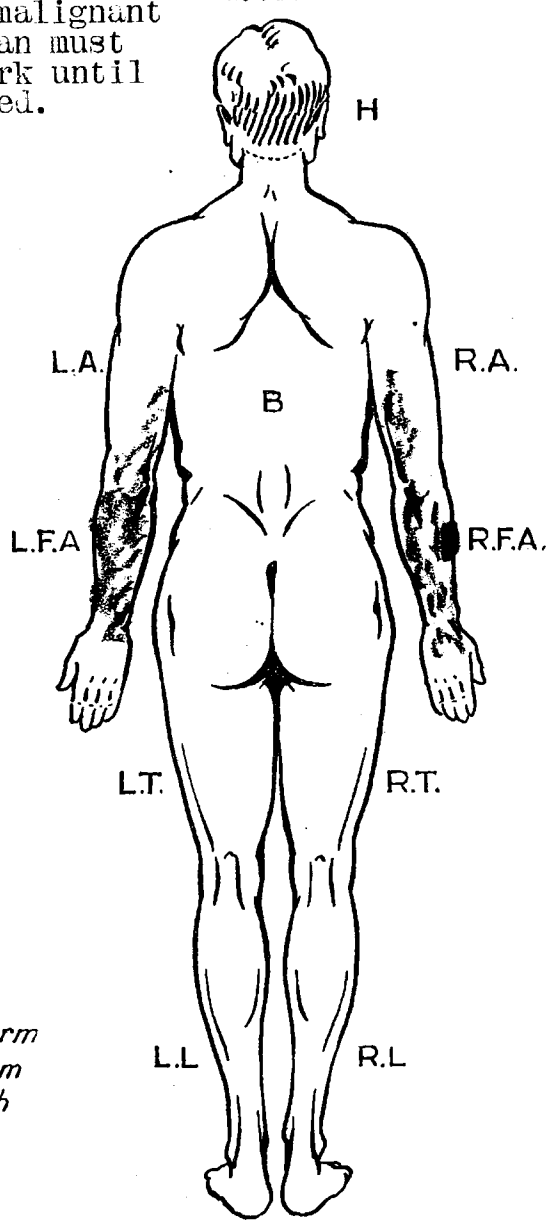
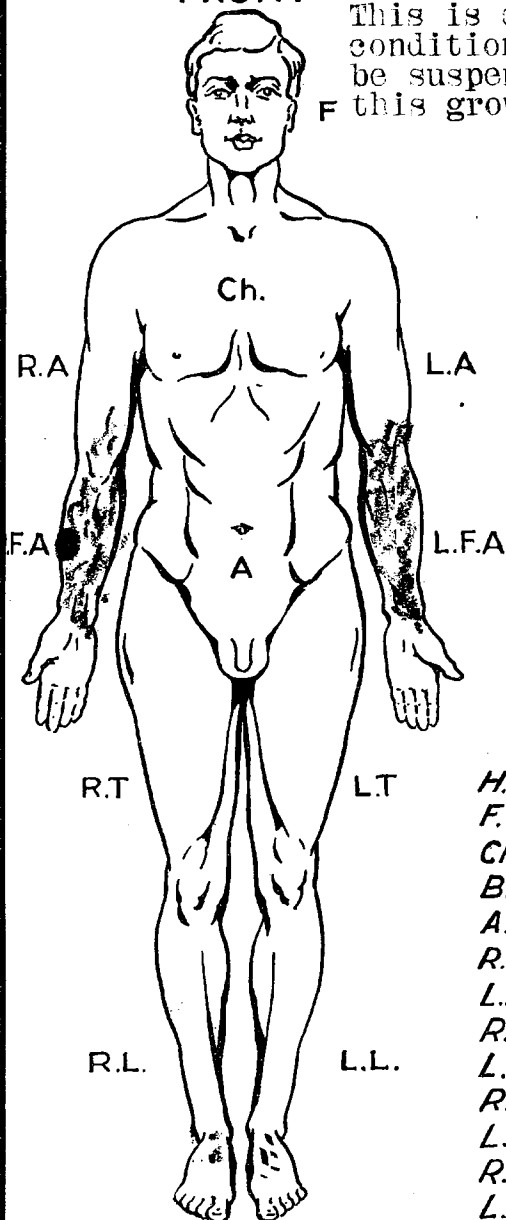
FRONT ulcer.

GROUP

BACK

This is certainly a malignant condition and this man must be suspended from work until this growth is removed.

5.



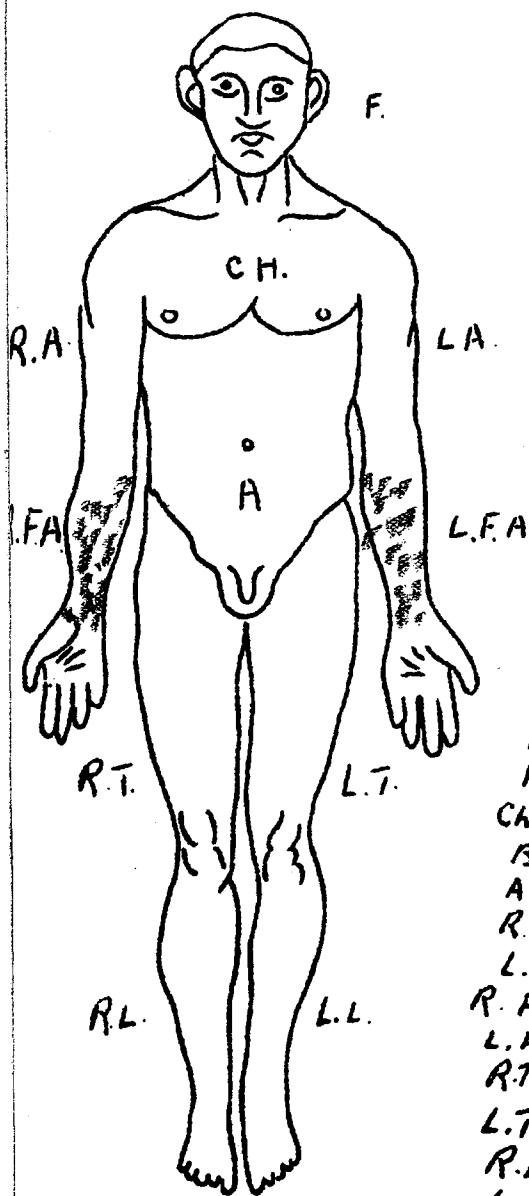
H. Head
F. Face
Ch. Chest
B. Back
A. Abdomen.
R.A. Right Arm
L.A. Left Arm
R.F.A. Right Forearm
L.F.A. Left Forearm
R.T. Right Thigh
L.T. Left Thigh
R.L. Right Leg
L.L. Left Leg

Name. Age. Occupation. Length of Service.
 .A. (A). 64 yrs. Paraffin Sheds. 28 years.

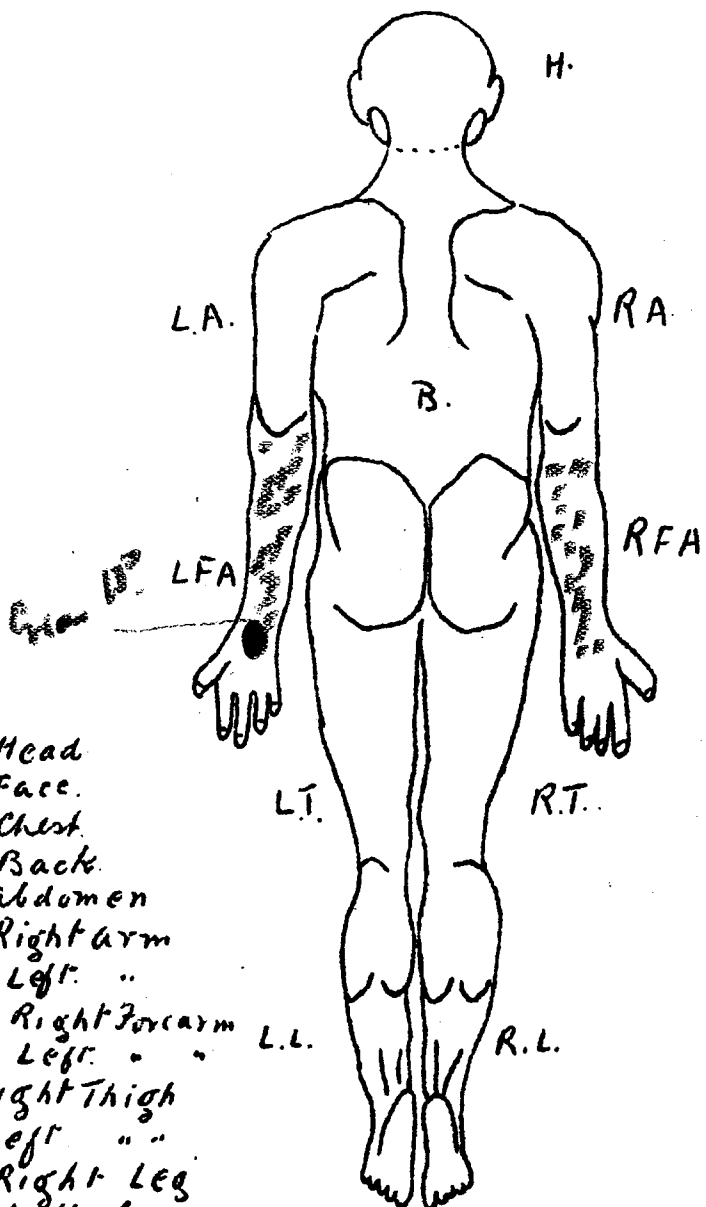
Description of Condition. Papular dermatitis both forearms, back and front.
 Granulating wound over dorsum of left hand, remaining after removal of epitheliomatous growth from that region two weeks previously. It is doubtful whether it has been completely eradicated.

Deep under observation. Group. 5.

Front.



Back.



H. Head
 F. Face.
 CH. Chest.
 B. Back.
 A. Abdomen
 R.A. Right Arm
 L.A. Left "
 R.F.A. Right Forearm
 L.F.A. Left "
 R.T. Right Thigh
 L.T. Left "
 R.L. Right Leg
 L.L. Left leg.

Name. Age. Occupation. Length of Service.

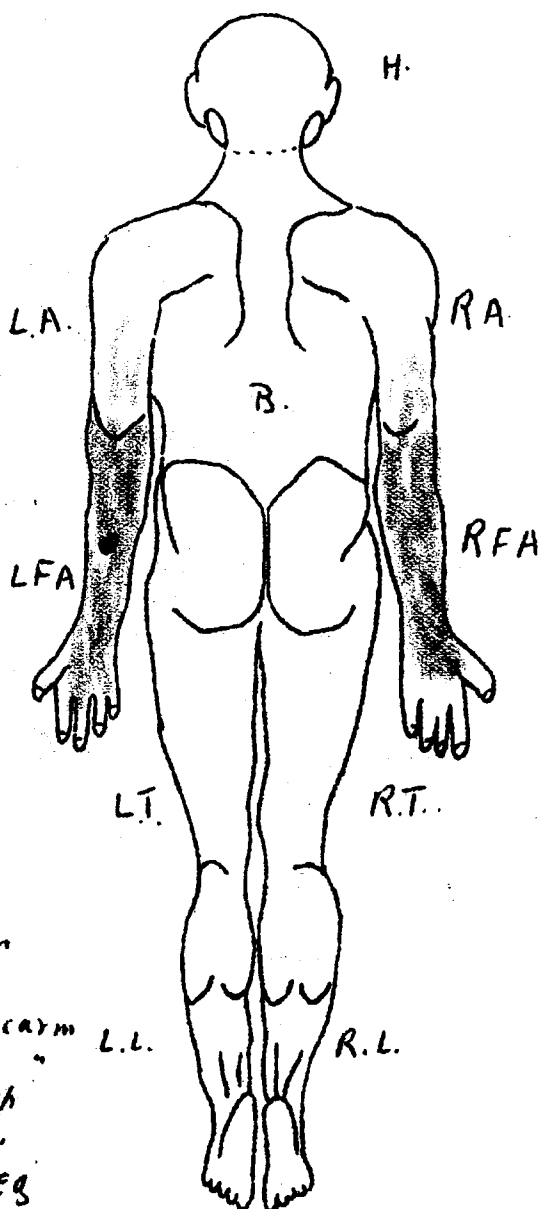
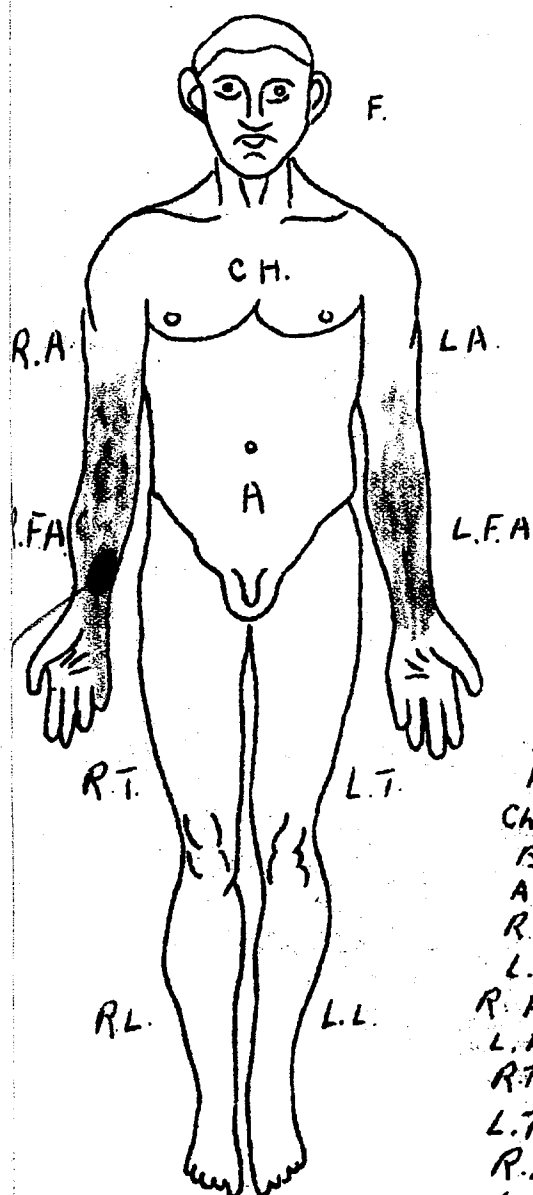
McL. (A). 62 yrs. Sweating and Paraffin Sheds. 47 years.

Description of Condition. R.F.A. and L.F.A. Erythematous and papular dermatitis both forearms, anteriorly and posteriorly. Numerous healed scars of a former dermatitis. Large Nodule back of left forearm, midway between wrist and elbow. Large ulcerating epithelioma over ulnar border of right forearm, three inches above wrist, about two inches in diameter, with depressed centre. No glands in armpit. ^{5.} This is evidently a malignant condition.

Front.

5.

Back.



H. Head
F. Face
CH. Chest
B. Back
A. Abdomen
R.A. Right Arm
L.A. Left "
R.F.A. Right Forearm
L.F.A. Left "
R.T. Right Thigh
L.T. Left "
R.L. Right Leg
L.L. Left leg.

SUMMARY CHARTS showing FREQUENCY at the

various EXAMINATIONS.

EXAMINATION OF PARAFFIN SHED WORKERS, ETC. AT THE VARIOUS WORKS
OF SCOTTISH OILS, LIMITED.

SUMMARY OF GROUPS.

	GREEN SHEDS.						SWEATING SHEDS.						GREEN AND SWEATING SHEDS.					
	THIS EXAM.			LAST EXAM.			THIS EXAM.			LAST EXAM.			THIS EXAM.			LAST EXAM.		
	Tot. No. Exam.	No. Men in Grp.	% on Tot.	Tot. No. Exam.	No. Men in Grp.	% on Tot.	Tot. No. Exam.	No. Men in Grp.	% on Tot.	Tot. No. Exam.	No. Men in Grp.	% on Tot.	Tot. No. Exam.	No. Men in Grp.	% on Tot.	Tot. No. Exam.	No. Men in Grp.	% on Tot.
GROUP 1.- Those having no Eruption due to Employment:-																		
Ampherston.....	33	10	30.3	32	13	40.6	7	7	100.0	7	6	85.7	40	17	42.5	39	19	48.8
Exburn.....	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bank.....	34	10	29.4	35	7	20.0	6	5	83.4	6	5	83.3	40	15	37.5	41	12	29.3
Total.....	67	20	29.9	67	20	29.8	13	12	92.3	13	11	84.6	80	32	40.0	80	31	38.7
GROUP 2.- Those having a few Papules only:-																		
Ampherston.....	33	12	36.4	32	6	18.8	7	-	-	7	1	14.3	40	12	30.0	39	7	18.0
Exburn.....	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bank.....	34	11	32.3	35	8	22.8	6	1	16.6	6	-	-	40	12	30.0	41	8	19.5
Total.....	67	23	34.3	67	14	20.9	13	1	7.7	13	1	7.7	80	24	30.0	80	15	18.8
GROUP 3.- Those having a Slight Degree of Eruption, limited in extent:-																		
Ampherston.....	33	10	30.3	32	12	37.5	7	-	-	7	-	-	40	10	25.0	39	12	30.7
Exburn.....	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bank.....	34	12	35.3	35	14	40.0	6	-	-	6	1	16.7	40	12	30.0	41	15	36.6
Total.....	67	22	32.8	67	26	38.8	13	-	-	13	1	7.7	80	22	27.5	80	27	33.7
GROUP 4.- Those having Extensive Eruptions:-																		
Ampherston.....	33	1	3.0	32	1	3.1	7	-	-	7	-	-	40	1	2.5	39	1	2.5
Exburn.....	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bank.....	34	1	3.0	35	6	17.2	6	-	-	6	-	-	40	1	2.5	41	6	14.6
Total.....	67	2	3.0	67	7	10.5	13	-	-	13	-	-	80	2	2.5	80	7	8.8
GROUP 5.- Those showing presence of Warty Growths, malignant or becoming so:-																		
No men are included in this Group.																		
ALL THE WORKS:-																		
Group 1.....	67	20	29.9	67	20	29.8	13	12	92.3	13	11	84.6	80	32	40.0	80	31	38.7
" 2.....	67	23	34.3	67	14	20.9	13	1	7.7	13	1	7.7	80	24	30.0	80	15	18.8
" 3.....	67	22	32.8	67	26	38.8	13	-	-	13	1	7.7	80	22	27.5	80	27	33.7
" 4.....	67	2	3.0	67	7	10.5	13	-	-	13	-	-	80	2	2.5	80	7	8.8
" 5.....	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total.....	67	67	100.0	67	67	100.0	13	13	100.0	13	13	100.0	80	80	100.0	80	80	100.0

Middleton Hall,

Uphall. 6th April, 1922.

SUMMARY of GROUPS.

Work.	GREEN SHEDS.						SWEATING SHEDS.						GREEN and SWEATING SHEDS.					
	2nd Exam. Jul/Aug. 1919.			3rd Exam. March, 1921.			2nd Exam. Jul/Aug. 1919.			3rd Exam. March, 1921.			2nd Exam. Jul/Aug. 1919.			3rd Exam. March, 1921.		
	Tot. No. Exam.	No. in Grp.	% on Tot.	Tot. No. Exam.	No. in Grp.	% on Tot.	Tot. No. Exam.	No. in Grp.	% on Tot.	Tot. No. Exam.	No. in Grp.	% on Tot.	Tot. No. Exam.	No. in Grp.	% on Tot.	Tot. No. Exam.	No. in Grp.	% on Tot.
1 - MEN WHO SHOW NO TRACE OF ANY SKIN LESION:-																		
Harston,	36	9	25.0	34	13	38.2	7	6	85.7	7	7	100.0	43	15	34.9	41	20	48.7
Turn,	25	7	28.0	27	9	33.3	15	15	100.0	15	15	100.0	40	22	55.0	42	24	57.1
Il,	19	9	47.4	12	6	50.0	13	8	61.6	7	6	85.7	32	17	53.1	19	12	63.1
nk,	25	6	24.0	40	12	30.0	6	5	83.3	6	5	83.4	31	11	35.5	46	17	37.0
TAL:-	105	31	29.5	113	40	35.4	41	34	83.0	35	33	94.3	146	65	44.5	148	73	49.3
2 - MEN HAVING A FEW PAPULES ONLY:-																		
Harston,	36	18	50.0	34	9	26.5	7	1	14.3	7	-	-	43	19	44.2	41	9	21.9
Turn,	25	12	48.0	27	6	22.2	15	-	-	15	-	-	40	12	30.0	42	6	14.3
Il,	19	3	15.8	12	-	-	13	1	7.6	7	1	14.3	32	4	12.5	19	1	5.3
nk,	25	10	40.0	40	8	20.0	6	1	16.7	6	-	-	31	11	35.5	46	8	17.4
TAL:-	105	43	41.0	113	23	20.4	41	3	7.3	35	1	2.9	146	46	31.5	148	24	16.2
3 - MEN HAVING LOCALISED ERUPTIONS LIMITED IN EXTENT:-																		
Harston,	36	7	19.5	34	11	32.3	7	-	-	7	-	-	43	7	16.3	41	11	27.0
Turn,	25	4	16.0	27	9	33.4	15	-	-	15	-	-	40	4	10.0	42	9	21.5
Il,	19	5	26.3	12	3	25.0	13	2	15.4	7	-	-	32	7	21.9	19	3	15.8
nk,	25	6	24.0	40	18	45.0	6	-	-	6	1	16.6	31	6	19.3	46	19	41.3
TAL:-	105	22	20.9	113	41	36.3	41	2	4.8	35	1	2.8	146	24	16.4	148	42	28.4
4 - MEN HAVING EXCESSIVE ERUPTION:-																		
Harston,	36	2	5.5	34	1	3.0	7	-	-	7	-	-	43	2	4.6	41	1	2.4
Turn,	25	2	8.0	27	3	11.1	15	-	-	15	-	-	40	2	5.0	42	3	7.1
Il,	19	2	10.5	12	3	25.0	13	2	15.4	7	-	-	32	4	12.5	19	3	15.8
nk,	25	3	12.0	40	2	5.0	6	-	-	6	-	-	31	3	9.7	46	2	4.3
TAL:-	105	9	8.6	113	9	7.9	41	2	4.9	35	-	-	146	11	7.6	148	9	6.1
5 - MEN SHOWING PRESENCE OF WARTY GROWTHS MALIGNANT OR BECOMING SO:-																		
No men either at this, or at last examination, are shown in this Group.																		
ALL THE WORKS:-																		
Group 1,	105	31	29.5	113	40	35.4	41	34	83.0	35	33	94.3	146	65	44.5	148	73	49.3
" 2,	105	43	41.0	113	23	20.4	41	3	7.3	35	1	2.9	146	46	31.5	148	24	16.2
" 3,	105	22	20.9	113	41	36.3	41	2	4.8	35	1	2.8	146	24	16.4	148	42	28.4
" 4,	105	9	8.6	113	9	7.9	41	2	4.9	35	-	-	146	11	7.6	148	9	6.1
" 5,	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL:-	105	105	100.0	113	113	100.0	41	41	100.0	35	35	100.0	146	146	100.0	148	148	100.0

EXAMINATION OF PARAFFIN SHEET WORKERS, ETC., OF THE VARIOUS WORKS
OF SCOTTISH OILS, LIMITED.

SUMMARY OF GROUPS.

	GREEN SHEETS.						SWEATING SHEETS.						GREEN and SWEATING SHEETS.					
	THIS EXAM.			LAST EXAM.			THIS EXAM.			LAST EXAM.			THIS EXAM.			LAST EXAM.		
	Tot. No. Exam.	No. Men in Grp.	% on Tot.	Tot. No. Exam.	No. Men in Grp.	% on Tot.	Tot. No. Exam.	No. Men in Grp.	% on Tot.	Tot. No. Exam.	No. Men in Grp.	% on Tot.	Tot. No. Exam.	No. Men in Grp.	% on Tot.	Tot. No. Exam.	No. Men in Grp.	% on Tot.
GROUP 1. - Those having no Eruption due to employment.-																		
Paraffin....	32	13	40.6	32	11	34.4	7	6	85.7	7	7	100.0	39	19	48.8	39	18	46.1
Broxburn.....	-	-	-	22	10	45.5	-	-	-	12	12	100.0	-	-	-	34	22	64.7
Edinburgh.....	35	7	20.0	33	13	39.4	6	5	83.3	7	7	100.0	41	12	29.3	40	20	50.0
Total.....	67	20	29.8	87	34	39.1	13	11	84.6	26	26	100.0	80	31	38.7	113	60	53.1
GROUP 2. - Those having a few Papules only.-																		
Paraffin....	32	6	18.8	32	12	37.5	7	1	14.3	7	-	-	39	7	18.0	39	12	30.8
Broxburn.....	-	-	-	22	9	41.0	-	-	-	12	-	-	-	-	-	34	9	26.5
Edinburgh.....	35	8	22.8	33	10	30.3	6	-	-	7	-	-	41	8	19.5	40	10	25.0
Total.....	67	14	20.9	87	31	35.6	13	1	7.7	26	-	-	80	15	18.8	113	31	27.4
GROUP 3. - Those having a Slight Degree of Eruption limited in extent.-																		
Paraffin....	32	12	37.5	32	9	28.1	7	-	-	7	-	-	39	12	30.7	39	9	23.1
Broxburn.....	-	-	-	22	2	9.0	-	-	-	12	-	-	-	-	-	34	2	6.0
Edinburgh.....	35	14	40.0	33	10	30.3	6	1	16.7	7	-	-	41	15	36.6	40	10	25.0
Total.....	67	26	38.8	87	21	24.1	13	1	7.7	26	-	-	80	27	33.7	113	21	18.6
GROUP 4. - Those having Extensive Eruptions.-																		
Paraffin....	32	1	3.1	32	-	-	7	-	-	7	-	-	39	1	2.5	39	-	-
Broxburn.....	-	-	-	22	1	4.5	-	-	-	12	-	-	-	-	-	34	1	2.8
Edinburgh.....	35	6	17.2	33	-	-	6	-	-	7	-	-	41	6	14.6	40	-	-
Total.....	67	7	10.5	87	1	1.2	13	-	-	26	-	-	80	7	8.8	113	1	0.9
GROUP 5. - Those showing presence of Warty Growths malignant or becoming so.-																		
No men are included in this Group.																		
ALL THE WORKS.-																		
Group 1.....	67	20	29.8	87	34	39.1	13	11	84.6	26	26	100.0	80	31	38.7	113	60	53.1
" 2.....	67	14	20.9	87	31	35.6	13	1	7.7	-	-	-	80	15	18.8	113	31	27.4
" 3.....	67	26	38.8	87	21	24.1	13	1	7.7	-	-	-	80	27	33.7	113	21	18.6
" 4.....	67	7	10.5	87	1	1.2	13	-	-	-	-	-	80	7	8.8	113	1	0.9
" 5.....	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total.....	67	67	100.0	87	87	100.0	13	13	100.0	26	26	100.0	80	80	100.0	113	113	100.0

EXAMINATION of PARAFFIN SHED WORKERS, etc., at the various WORKS of
SCOTTISH OILS, LIMITED.

SUMMARY OF GROUPS.

	GREEN SHEDS.						SWEATING SHEDS.						GREEN and SWEATING SHEDS.					
	THIS EXAM.			LAST EXAM.			THIS EXAM.			LAST EXAM.			THIS EXAM.			LAST EXAM.		
	Tot. No. Exam.	No. Men in Grp.	% on Tot.	Tot. No. Exam.	No. Men in Grp.	% on Tot.	Tot. No. Exam.	No. Men in Grp.	% on Tot.	Tot. No. Exam.	No. Men in Grp.	% on Tot.	Tot. No. Exam.	No. Men in Grp.	% on Tot.	Tot. No. Exam.	No. Men in Grp.	% on Tot.
GROUP 1 - THOSE HAVING no ERUPTION due to EMPLOYMENT:-																		
Spherston.....	32	11	34.4	33	10	30.3	7	7	100.0	7	6	85.7	39	18	46.1	40	15	40.0
Exburn.....	22	10	45.5	27	9	33.3	12	12	100.0	15	15	100.0	34	22	64.7	42	24	57.1
Hall.....	-	-	-	12	6	50.0	-	-	-	7	6	85.7	-	-	-	19	12	63.2
Bank.....	33	13	39.4	40	12	30.0	7	7	100.0	6	5	83.4	40	20	50.0	46	17	37.0
Total.....	87	34	39.1	112	37	33.1	26	26	100.0	35	22	91.4	113	60	53.1	147	69	47.0
GROUP 2 - THOSE HAVING a few PAPULES only:-																		
Spherston.....	32	12	37.5	33	14	42.4	7	-	-	7	1	14.3	39	12	30.8	40	15	37.5
Exburn.....	22	9	41.0	27	6	22.2	12	-	-	15	-	-	34	9	26.5	42	6	14.3
Hall.....	-	-	-	12	-	-	-	-	-	7	1	14.3	-	-	-	19	1	5.3
Bank.....	33	10	30.3	40	8	20.0	7	-	-	6	-	-	40	10	25.0	46	8	17.4
Total.....	87	31	35.6	112	28	25.0	26	-	-	35	2	5.7	113	31	27.4	147	30	20.4
GROUP 3 - THOSE HAVING A LIMITED DEGREE of ERUPTION limited in EXTENT:-																		
Spherston.....	32	9	28.1	33	9	27.3	7	-	-	7	-	-	39	9	23.1	40	9	22.5
Exburn.....	22	2	9.0	27	9	33.4	12	-	-	15	-	-	34	2	6.0	42	9	21.5
Hall.....	-	-	-	12	3	25.0	-	-	-	7	-	-	-	-	-	19	3	15.8
Bank.....	33	10	30.3	40	18	45.0	7	-	-	6	1	16.6	40	10	25.0	46	19	41.3
Total.....	87	21	24.1	112	39	34.8	26	-	-	35	1	2.9	113	21	18.6	147	40	27.2
GROUP 4 - THOSE HAVING EXTENSIVE ERUPTIONS:-																		
Spherston.....	32	-	-	33	-	-	7	-	-	7	-	-	39	-	-	40	-	-
Exburn.....	22	1	4.5	27	3	11.1	12	-	-	15	-	-	34	1	2.8	42	3	7.1
Hall.....	-	-	-	12	3	25.0	-	-	-	7	-	-	-	-	-	19	3	15.8
Bank.....	33	-	-	40	2	5.0	7	-	-	6	-	-	40	-	-	46	2	4.3
Total.....	87	1	1.2	112	8	7.1	26	-	-	35	-	-	113	1	.9	147	8	5.4
GROUP 5 - THOSE SHOWING PRESENCE of WARTY GROWTHS MALIGNANT or BECOMING so:-																		
No men are in this Group.																		
ALL THE WORKS:-																		
Group 1.....	87	34	39.1	112	37	33.1	26	26	100.0	35	22	91.4	113	60	53.1	147	69	47.0
Group 2.....	87	31	35.6	112	28	25.0	26	-	-	35	2	5.7	113	31	27.4	147	30	20.4
Group 3.....	87	21	24.1	112	39	34.8	26	-	-	35	1	2.9	113	21	18.6	147	40	27.2
Group 4.....	87	1	1.2	112	8	7.1	26	-	-	35	-	-	113	1	.9	147	8	5.4
Group 5.....	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total.....	87	87	100.0	112	112	100.0	26	26	100.0	35	35	100.0	113	113	100.0	147	147	100.0

Middleton Hall,

UPHALL. 10th November, 1921.

EXAMINATION OF PAPERS IN FIVE SUBJECTS, etc., AT THE VARIOUS WORKS of the Scottish Oil Companies.

SUMMARY of RESULTS.

Company.	GREEN SHEDS.						SWEATING SHEDS.						GREEN & SWEATING SHEDS.					
	LAST EXAM.			THIS EXAM.			LAST EXAM.			THIS EXAM.			LAST EXAM.			THIS EXAM.		
	Tot. in	No. in	Avg. on Tot.	Tot. in	No. in	Avg. on Tot.	Tot. in	No. in	Avg. on Tot.	Tot. in	No. in	Avg. on Tot.	Tot. in	No. in	Avg. on Tot.	Tot. in	No. in	Avg. on Tot.
	Dept.	Grp.		Dept.	Grp.		Dept.	Grp.		Dept.	Grp.		Dept.	Grp.		Dept.	Grp.	
TABLE 1 - MEN WHO SHOW NO TRACE OF ANY SKIN LESION:																		
Thornston Company.....	35	9	25.7	36	9	25.0	7	6	25.7	7	6	25.7	42	15	35.7	43	15	34.9
Burn Company.....	25	7	28.0	25	7	28.0	15	15	100.0	15	15	100.0	40	22	55.0	40	22	55.0
W's Coy., Uphall.....	13	7	38.9	19	9	47.4	10	10	52.6	13	8	61.6	37	17	45.9	32	17	53.1
" Addiewell.....	26	7	27.0				13	7	53.0				39	14	35.9			
Bank Company.....	25	7	28.0	25	6	24.0	5	4	80.0	6	5	83.3	30	11	36.7	31	11	35.5
Total.....	129	37	28.7	125	31	29.5	59	42	71.2	41	34	83.0	188	79	42.0	146	65	44.5
TABLE 2 - MEN WHO HAVE 1, 2 or 3 PAPULES, NOT MORE:-																		
Thornston Company.....	35	9	22.9	36	18	50.0	7	1	14.3	7	1	14.3	42	9	21.4	43	19	44.2
Burn Company.....	25	5	20.0	25	12	48.0	15	-	-	15	-	-	40	5	12.5	40	12	30.0
W's Coy., Uphall.....	13	2	11.1	19	3	15.8	10	2	10.0	13	2	7.6	37	4	10.8	32	4	12.5
" Addiewell.....	26	3	19.2				13	-	-				39	5	12.9			
Bank Company.....	25	6	24.0	25	10	40.0	5	-	-	6	1	16.7	30	6	20.0	31	11	35.5
Total.....	129	26	20.2	125	43	41.0	59	3	5.1	41	3	7.3	188	29	15.4	146	46	31.5

	CHERRY SHEDS.						SWEATING SHEDS.						CHERRY & SWEATING SHEDS.					
	Last Exam.			This Exam.			Last Exam.			This Exam.			Last Exam.			This Exam.		
	Tot. in Dept.	No. men in Grp.	% on Tot.	Tot. in Dept.	No. men in Grp.	% on Tot.	Tot. in Dept.	No. men in Grp.	% on Tot.	Tot. in Dept.	No. men in Grp.	% on Tot.	Tot. in Dept.	No. men in Grp.	% on Tot.	Tot. in Dept.	No. men in Grp.	% on Tot.
ANY.																		
1 - MEN WHO SHOW ANY RUPTION DO A SLIGHT DEGREE; LIMITED IN EXTENT AND NOT DIFFUSE.																		
Watch Company....	35	16	45.7	36	7	19.5	7	-	-	7	-	-	42	16	38.1	43	7	16.3
Co. Company.....	25	11	44.0	25	4	16.0	15	-	-	15	-	-	40	11	27.5	40	4	10.0
Co., Uphall....	18	3	16.7	19	5	26.3	19	5	26.3	13	2	15.4	37	8	21.6	32	7	21.9
" Addiswell..	26	7	26.9				13	4	30.7				39	11	28.2			
Company.....	25	9	36.0	25	6	24.0	5	1	20.0	6	-	-	30	10	33.3	31	6	19.3
Total.....	129	46	35.6	105	22	20.9	59	10	16.9	41	2	4.9	188	56	29.8	146	24	16.4
2 - MEN WHO HAVE EXTENSIVE RUPTIONS OVER HANDS, LEGS or BOTH:-																		
Watch Company....	35	2	5.7	36	2	5.5	7	-	-	7	-	-	42	2	4.8	43	2	4.6
Co. Company.....	25	2	8.0	25	2	8.0	15	-	-	15	-	-	40	2	5.0	40	2	5.0
Co., Uphall....	18	6	33.3	19	2	10.5	19	1	5.3	13	2	15.4	37	7	18.9	32	4	12.5
" Addiswell..	26	3	11.5				13	2	15.4				39	7	17.9			
Company.....	25	3	12.0	25	3	12.0	5	-	-	6	-	-	30	3	10.0	31	3	9.7
Total.....	129	18	13.9	105	9	8.6	59	3	5.1	41	2	4.9	188	21	11.2	146	11	7.6
3 - MEN SHOWING PRESENCE of WARTY GROWTHS, MALIGNANT or BECOMING so:-																		
Watch Company....	35	-	-	36	-	-	7	-	-	7	-	-	42	-	-	43	-	-
Co. Company.....	25	-	-	25	-	-	15	-	-	15	-	-	40	-	-	40	-	-
Co., Uphall....	18	-	-	19	-	-	19	1	5.3	13	-	-	37	1	2.7	32	-	-
" Addiswell..	26	-	-				13	4	-				39	2	5.1			
Company.....	25	-	-	25	-	-	5	-	-	6	-	-	30	-	-	31	-	-
Total.....	129	2	1.6	105	-	-	59	1	1.7	41	-	-	188	3	1.6	146	-	-

COMPANIES/

	GREEN SHEDS.						SWEATING SHEDS.						GREEN & SWEATING SHEDS.					
	Last Exam.			This Exam.			Last Exam.			This Exam.			Last Exam.			This Exam.		
	Tot. in Dept.	No. men in Grp.	% on Tot.	Tot. in Dept.	No. men in Grp.	% on Tot.	Tot. in Dept.	No. men in Grp.	% on Tot.	Tot. in Dept.	No. men in Grp.	% on Tot.	Tot. in Dept.	No. men in Grp.	% on Tot.	Tot. in Dept.	No. men in Grp.	% on Tot.
1. COMPARTMENTS:-																		
1.....	129	37	28.7	105	31	29.5	59	42	71.2	41	34	83.0	188	79	42.0	146	65	44.5
2.....	129	26	20.2	105	43	41.0	59	3	5.1	41	3	7.3	188	29	15.4	146	46	31.5
3.....	129	46	35.6	105	22	20.9	59	10	16.9	41	2	4.8	188	56	29.8	146	24	16.4
4.....	129	18	13.9	105	9	8.6	59	3	5.1	41	2	4.9	188	21	11.2	146	11	7.6
5.....	129	2	1.6	105	-	-	59	1	1.7	41	-	-	188	3	1.6	146	-	-
Total.....	129	129	100.0	105	105	100.0	59	59	100.0	41	41	100.0	188	188	100.0	146	146	100.0

Pumpharston:- Four men (2 Sweating Sheds and 2 Green Sheds) in Group 1, and one man (Green Sheds) in Group 2, were not examined at this Examination, and their previous Groups have been taken.
Four men (1 Sweating Sheds and 3 Green Sheds) in Group 2; and one man (Green Sheds) in Group 3 show great improvement, and these men might be put forward a Group by next Examination.

exburn:- The 15 Sweating Shed Workmen examined at first Examination, being quite free from any eruption, are not included in this Examination. and are merely included in the Summary for the sake of comparison.

Smith:- Two Sweating House Men in Group 1 were not examined at this Examination, and their previous Groups have been taken.

Hewell:- All the Sweating House and Green Shed Men are excluded from this Summary, as they refused to present themselves for examination.

Pumpharston Works,
MIDDERBURY. 4th September, 1919.