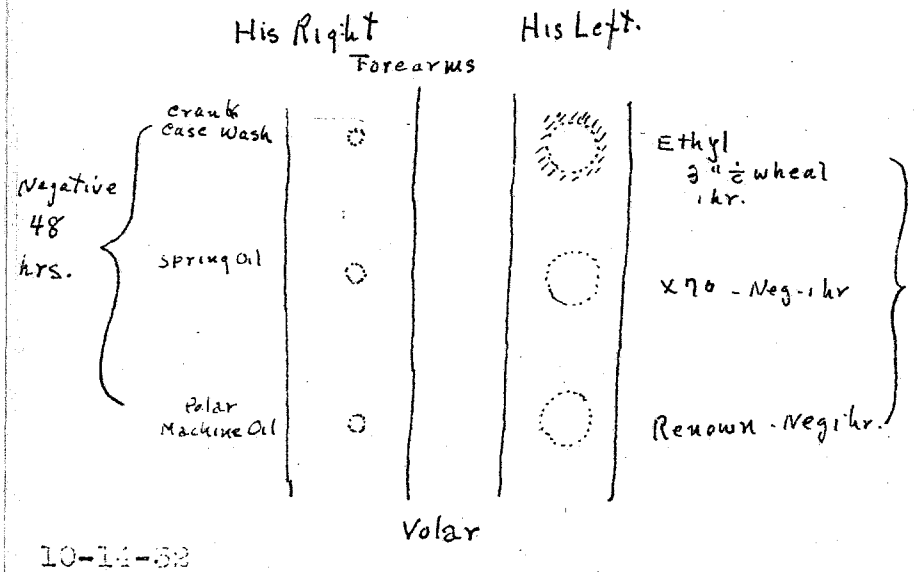
[redacted] - Age: 26

C.C. Dermatitis.

P.I. November and December 1931, had a large hive right cheek with soreness, ~~and~~ burning and itching followed by extension of swelling to hands with small discrete vesicles, later coalescing and spreading up arms and neck - with few patches on chest.
Off work 21 months till January 1932 - Free till July 1932 when eruption reappeared as wheal- vesicles on hand - spreading over entire body within 4 days - increased in severity for 1 month then gradually improved to date. Only remaining area is on calves. Has had epidermophytosis feet repeatedly. Never spread - no other dermitis.
Filling Station Attendant since April 1930.



Symptoms in 5 hrs.
Strongly pos. 8 hrs.
Max. Intensity 48 hrs.

10-14-32
Forearm placed in contact with cleaned mouth of 2 oz bottles - vapor exposure only - began at 4:12 P.M. Erythema over Ethyl at 4:27 spreading about 2 cm. beyond lip. At 4:52 erythema had spread about 2-3 cm. beyond lip. Complained of smarting 10 mintues after exposure began (from Ethyl) Discontinued all at 4:52 - 40 minute exposure-
X70 and Renown are negative - skin normal white-reddened- indented - reddened rings from neck pressure only.
Ethyl zone is exquisitely tender "burns as if on fire" - and shows a high red color. Within the neck indentation, that is, exposed area, a wheal is forming. (bottle neck 1-1/4 inches inside diameter).
Total erythema area 3" in diameter with some graduated thickening from ring area.

5:30 P.M. Erythema greatly lessened - wheal small - tenderness lessened 2 inches across - others normal.

6:00 P.M. Receded further - color now pink.

10-15-32
11:00 A.M.
(1) Ethyl area slightly enlarged - indurated - marked sub cut. edema - elevated - deep red - numerous small vesicles - some confluent - typical derm.
(2) X.70 - slightly reddened - discrete vesicles over exposed area with slightly inflamed skin between - very slight thickening.

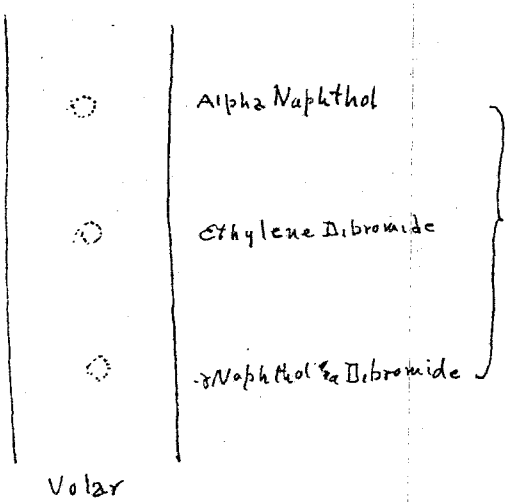
(3) Renown - thickened - reddened - elevated less than (1) but definite - vesicles most pronounced - entire area confluent mass - typical dermatitis. Vesicular reaction most marked on this elevation- inflammatory and sub cut. edema - most marked in Ethyl(1)

8-10 vesicles have appeared this A.M. on 1st and 2nd fingers right hand in interdigital space. 2-3 in thenar eminence. (Photo 2x)

10-16-32
All three areas increased somewhat in size - and symptoms increased - itching particularly marked. 24 hours - no relief till Monday 10-17-32 about noon 60 hours when they began to subside.

10-18-32
Itching practically disappeared this day - swelling almost gone - vesicles broke - and began to dry.

Rt. Forearm



To 20 c.c. amounts clear paraffin oil were added (1) alpha naphthol (.1 gm per 4000 c.c.) Ethylene dibromide (2.0 gm per 4000 cc) and one solution containing both in above concentration. Present samples Sohio Ethyl are 50% cracked gasoline - X.70 is 100% cracked - Renown (3rd grade) is natural gasoline. Both Ethyl and X70 contain alpha naphthol as inhibitor. in above Conc.

10-19-32
12:00 Noon - Ethyl area has central scaly sl. thickened area with ring of dried desquamating skin - tender on manipulation - no fresh lesion or weeping - is largest by 1/4 inch.
(2) X-70 shows branny desq. with pigmentation - some scaling at edges - slight thickening - no fresh vesicles or weeping.
(3) Renown area is smallest of three but is completely covered with desquamating skin - area is indurated - pigmented - no fresh vesicles or weeping - 2 pseudopod like extensions of yesterday marked by desquamating and pigmented skin. This area is now the most tender.

There has been no reaction for any of the patch tests though there are numerous small papulo vesicles in rt cubital fossa result of the adhesive tape and rubbing associated with its removal. The interdig lesions remain the same - 4-5 small papules have appeared on left ls finger dorsum - today - (Photo 2x)

[redacted]

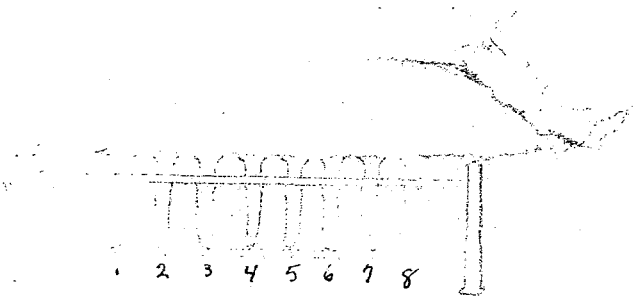
10-2[illegible]-32
Improved. Vesicles gone - scaling, thickening still present - no itching.

10-31-32
Dried - crusty - induration Ethyl and X70 disappeared though skin is stiff from scales. Renown area is still indurated and presents the heaviest crusting. The X70 area is practically healed. A few scattered papules and vesicles have appeared today on the left forearm on its lateral aspect, and there are a few minor elevations of skin on cheeks and neck - a weeping desquamated area has appeared behind left ear - no other fresh lesion - but it would appear that local application has initiated a mild general condition. Exp.I with Renown Fraction done at 1:30 - 4:45 P.M.

11-[illegible]-32
Renown area still remains somewhat indurated - all else scaling - healing well - no fresh lesion - Photo.

11-[illegible]-32
Ethyl and X70 areas practically healed. Renown still slightly desquamating and thickened.

11-[illegible]-32
All apparently healed. Still covered with fine layer desquamating skin-dry - no recrudescence result treatment to date.



Tube	Fraction	B.P. °C
1	1	0-73
2	2	73-99
3	3	99-114
4	4	114-133
5	5	133-158
6	6	158-178
7	7	178 — Residue
8	control Abs. EtOH	
9	Whole Renown	

#5 a fractionated sample of 1 L. of Renown gasoline (SOH10) received in seven bottles each containing 140 c.c. constituting fractions of the above Boiling point ranges. 8 serological tubes taken and 1/2 filled with each fraction + control and arranged as in above diagram, and that of control in separate set.
Subject (R.M.) forearm was allowed to rest firmly on lips of cleaned tubes- contact being made in volar aspect initiated at 4:30 P.M. - no sensation other than those of pressure were noted during the 15 minute exposure - ending at 4:45 P.M. At Termination, Subjects' forearm and that of control were neg. except for rings of reddening caused by pressure on mouth of tubes.

[redacted]

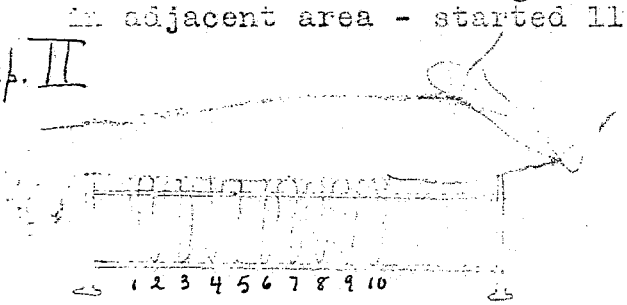
5:00 P.M. no reactions - pressure marks subsiding.

10-23-32
No reaction in 24 hours - either in M.M. or control. Pressure marks all gone in 3-4- hours.

10-24-32
No reactions

10-25-32
No reactions. Repeated for 30 minutes - with addition tube 9 - Whole renown - starts 10:25 - ended 11:05 - some smarting and burning whole renown area - others negative - tubes 1-7 mixed tested with control in adjacent area - started 11:30.

Exp. II



Tube	Fraction	B.P. °C
1	- 1	- 0 - 57
2	- 2	- 57 - 86
3	- 3	- 86 - 109
4	- 4	- 109 - 131
5	- 5	- 131 - 146
6	- 6	- 146 - 167
7	- 7	- 167 — Residue
8	- Renown whole	
9	- Control	
10	- Ethyl whole	

1 fractionated litor of SoHlO Ethyl gasoline - 7 cuts each 150 c.c. above B.P. ranges - Ten tubes taken - arranged as above - treated as Exp.I for 15 minutes -
begun at 11;48 - ended 12:03 - no immediate reactions.

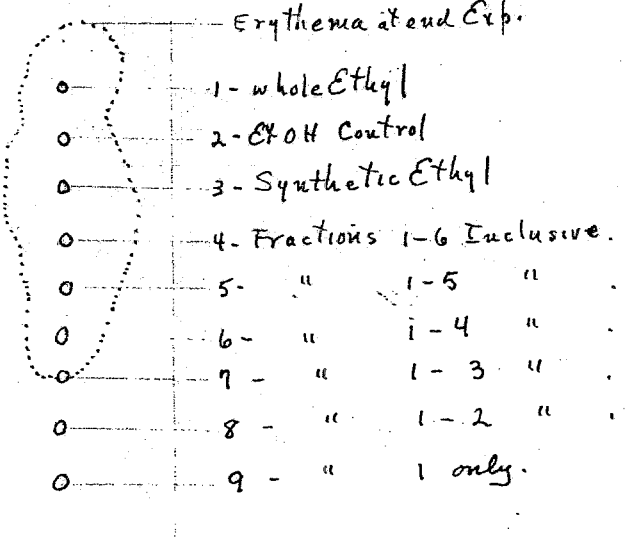
10-31-32
No reactions

10-24-32
Repeated for 30 minutes exposure- 11:00 A.M. - complained of burning- Ethyl Tube 20 minutes - no reaction at end of Exp.

10-25-32
Neg. in 24 hours (both) except tube 10 (Ethyl whole) which has a few tiny vesicles and some inflammation - minimal positive reaction.

10-26-32
Area of tube 10 flared up considerably during treatment with Ethyl in Exp.III - as did other areas except those of original exposures - no vesicles have formed - erythema - infiltration only.

[redacted] Exp. III - Ethyl cuts - Rt 26°C - 10-26-32



#1
Fraction 1 - 0-57°C
" 2 - 57-86°
" 3 - 86-109
" 4 - 109-131
" 5 - 131-146
" 6 - 146-167
" 7 - 167 - Residue

Rt. forearm
Volar

Exposure 30 minutes - 4:55 - 5:25 P.M.

Complains burning in 1 and 3 end of 10 minutes - exposed areas 1-2-3 reddened. Old Ethyl area of 12-24-32 flared up during treatment - quite angry looking at termination. Old questionable area left arm reddened and erythemata appeared in both popliteal spaces [illegible] old - persistent eruption - no flare up noted yesterday or on previous treatment with other than Ethyl gasolines - 10 minutes after termination exposure - lesion behind right ear began to weep for first time during day. 30 minutes after exposure area 1 shows several small blisters - area 3 is 50% covered by a large bleb - result confluence several smaller ones - no activity to date on part of original three areas.

10-27-32
Areas 1 and 3 positive - induration - redness and bleb -
Area 4 - weakly positive . Area 5 questionably so - Area 10 of preceding experiment receded. Renown areas negative -left arm clear - legs - angry-weeping numerous vesicles and new areas on thighs and ankles. Ear still weeping - all old lesions activated by treatment - It would appear that either all cuts are necessary for reaction or that some lighter fractions are necessary to carry the heavier irritating fraction into the skin, and that a general reaction can be induced in distant areas skin within 10-30-minutes of treatment- by what mechanism (no vapor in air)-will rest 24 hours - try heavy cuts with carrier lighter fraction of 1 - EtOH etc.

10-28-32
Lesions 1 and 3 still red infiltrated - 4 elevated - 5 neg.
Area 10 preceding exp. receded - Renown areas neg. Old lesion on legs are continuing to spread - are painful and swollen, and there is redness and infiltration scrotal area. Area behind ear is spreading and wet. Original 3 are normal. Shadow rings of 2 old areas lft.arm have appeared. (in location of old 4 -5 Renown Exp. of 10-25-32)
Photo right arm Exp.III end 48 hours.

[redacted]

10-31-32
Lesions have not advanced but have increased in severity - left leg weeping copiously - ear same - scrotal and scattered lesions remain papular. The reaction to treatment was general and in that sense a mild one papulo and papulo-vesicular eruption discrete and scattered but there were focal recrudescence at the old lesions of considerable severity with considerable general reaction - malaise etc.

11-1-32
7:30 P.M. had an attack characterized by palpitation - headache - hot sensation - flushing and reddening of skin - dilitation veins - and inspiratory dyspnoea - lasted 1-1/2 hours - tapered off after first half hour - followed by headache and lower abdominal pain - no history of previous attacks - except that there was some dyspnoea at times during previous attacks.

11-2-32
11:00 A.M. feels well this A.M. Attack of last night not unlike a histamine shock or a mild anaphylactic attack. Further treatments postponed. Areas healing nicely - general lesions have improved since Monday - Wet dressings 2% NaCl and Na Citrate applied.

11-3-32
Lesions on legs and ear have increased in severity - and extent and there is low grade pyogenic infection of vesicles on calves - opened - Burrows Bichloride dressings.

11-5-32
Small superficial infections have cleared up but the dermatitis flared up alarmingly this P.M. The lesions on the calves wept copiously and the spread of the secretion was marked by the appearance of new areas on the calves - feet and lower thighs.

11-8-32
Lesions on legs slowly spreading upward on lower 1/3 thick and have advanced over entire dorsum foot. Swelling of calves and legs is marked and there is considerable malaise.

11-10-32
This A.M. - 15 days after last treatment the dermatitis spread to the dorsum of the hands and entire lower forearms - lesions being confluent on dorsum hands but tapering off to discrete papulo-vesicles on the forearms. There has been no unusual hand contact with discharge from the legs nor has there been any new gasoline exposure. Some heightened sensitivity of the skin has apparently supervened as there has appeared a well marked vesicular dermatitis on an area of the cubital fossa which was briefly iodinized prior to venipuncture yesterday.

11-11-32
Hands now involved on both surfaces though there has been no spread further up the forearms - the legs and thighs remain about the same - with a slight advance on the feet - presumably due to wetting of fresh surfaces with serum from lesions above - treatment to date has consisted of cleansing and covering with calomine lotion ℞ 1% Phenol - changed to 2% Resorcin ointment.

[redacted]

11-12-32
Little change - no spread - Tested today with P. D. and Co. antigens in groups. Rt.Arm - 24,26,27, 1,2,5,6, and 7.
Left Arm - 8,9,10,11,14,15,16,17,18. There was a well marked wheal at each site 10 minutes after application antigen to scarified areas but this subsided in 4 hours - all clear in 12-24 hours.

11-17-32
Legs are drying and scaling in original areas on calves but periphery of lesions is still angry and active with occasional small vesicles - weeping except at edge has stopped. Hands are not changed.

11-19-32
Legs better - hands weeping - forearm areas drying without much desquamation - ear improving.

11-21-32
Calves practically free - except for 1 or 2 small weeping areas on each - dorsum hands clear - few active areas palms and interdigital areas - ear clear except in sulcus. The course of this recrudescence has been very instructive. This dates directly from the last period of treatment in Exp.III on 10-26-32 during+immediately after which there occurred reaction in distant parts which progressed, though treatment was discontinued, and eventually became general. It is interesting to note that when the reaction did assume general proportions the initial general response was first observed in those areas that had been worst affected and slowest to heal during previous attacks.

The lesions on the hand began to spread 15 days after the last exposure - without any re-exposure of unusual contact with discharge from other lesions, and are running a two weeks course being fairly well resolved at this time. These delayed heightened reactions suggest various possibilities:

1. delayed absorption
2. That the absorbed irritant molecule is self perpetuating as a virus might be.
3. That the changes initiated in the skin at the exposed area were in themselves progressive and led to a heightened sensitivity of the skin generally - either directly or by virtue of products cast off by the affected skin area - of nature of "Reagins"
4. The absorbed irritant may not be destroyed or excreted but continue to circulate in sufficient concentration to induce reactions in areas as they are sensitized by "reagins" elaborated from the original source.

1. The first possibility cannot be excluded but is not suggested by the course of the general reaction which does not describe a regular curve in intensity but rises after 2 definite lag or negative periods.

2. Cannot be excluded - but as yet neither serum from skin areas nor patient's blood serum causes any similar reaction in Rabbits or monkeys.

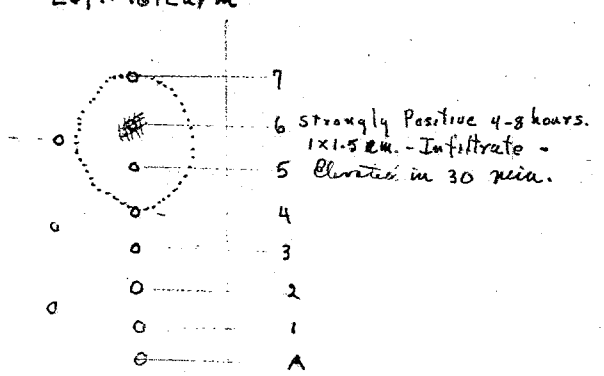
3. The third and fourth possibilities remain the most likely from the

[redacted]

course of the condition as well as from the results of passive transfer experiments below which suggest the occurrence of either sensitizing bodies (Reagins) or a virus like substance in the patient's circulating blood.

Experiment IV Ethyl Cuts - 15 Min - 10:50 to 11:05 a.m. R.T. 26°

Passive transfer areas



Tubes

7 - Pure Benzol
6 - Cut 5 (vide infra) of 7 (1) in Cut 1 (1) 1:4
5 - Synthetic Ethyl (1)
4 - Cut 5 of 7 (1) in Xylene 1:4
3 - Whole Ethyl
2 - Cut 5 of 7 (1) in Benzol 1:4
1 - Cut 1 (1) alone
A - Xylene alone.

Volar

Fraction # 7 of Ethyl gasoline B.P. 167 + Re-cut into 5 fractions in Vacuo - manometer 29+ inches + entire time - Oil bath.

Fraction	Vol	T°C	T Bath °C
1	± 25 cc	24-33	68
2	± 25 cc	33-34.5	68
3	± 30 cc	34.5-38.7	86
4	± 25 cc	38.1-45	90
5	± 20 cc	45 -+	

T°C for fractions inaccurate as monometer was too low to be read, but distillation was maintained at constant rate between cuts and samples represent progressive fractions - all are clear - good white except 5 which of course contains dye and in addition became cloudy within a few hours exposure to diffuse light.

Tubes prepared in the above fashion and arrangement were used for exposure of passively sensitized areas on arm of normal individual. The areas were sensitized by intradermal injection of 0.03 c.c. of patient's serum (preserved with 1. 10,000 Merthiolate) into each of six areas (Nos.1-6) on forearm - 6 hours being allowed to elapse following injection for the sensitization reaction to take place. At the end of this time a 15 minute exposure to vapor in the usual fashion over the

[redacted]

mouths of 7/8 full serological test tubes was carried out. Five minutes after experiment started there was marked pain and smarting in the area of tube "6" which increased in intensity during the 15 minute exposure at the end of which the burning could barely be tolerated. There was noted a red areola - tender to touch in an oval area from tube - 4-to tube 7. Area #6 was markedly affected - the sensitized area was glazed-reddened and swollen and there was elevation and infiltration for 1.5 cm (diameter) around the injection site. This was well marked in 4-8 hours and tapered off for 24 hours but is still bronzed and noticeable 10 days after treatment.

Six salt solution and Merthiolate (1:10,000) injection of 0.03 cc were used as controls and a 15 minute exposure of untreated skin areas in the same fashion with identical tubes was done on the other arm immediately following the original exposure. No observable effect was noted on the control sites either at the end of the exposure or 24 hours later.

It was noted that the sensitizing serum was irritating when injected and produced a sizeable wheal for 1-2 hours after injection. 1 showing 2 small pseudopods. This may have been due to some irritating substance present in the serum - other than the sensitizing agent or may have been due to reactions with minute amounts of the antigen present in the skin of the forearm as the result of previous exposures to gasoline in use as control.

11-25-32. The injection of 0.03 cc of Mr. Miller's serum intradermally to another (C.V.) normal individual failed to give the same type of wheal as was noted on prior injections into (W.M.) another normal skin. Either due to difference in skins or to presence of antigen in skin first control (W.M.)

Dressed right leg with 10% Thionex in Lanolin on 11-21-32. Five hours later leg began to swell and weep - by 8:00 P.M. was painful and discharging copiously. Following morning (11-22-32) left leg began to weep and swelled slightly. Ears wept and several new papular areas appeared in hands and old iodinized area - the latter subsequently vesicalated and oozed serum for 1 day. There has been improvement during past three days. It seems as though there has been a typical sensitivity reaction to the Thionex which was employed several times during the first attack 1 month ago. Malaise, vertigo, full feeling in head with staggering gait noted on several occasions past 2 days - worse at nights - attacks last 1-3 minutes and simulate drunkenness but pass off rapidly.

11-28-32 Both legs in about same condition as they were 1 week ago - except for improvement in the appearance of such epithelialized areas as escaped during this last recrudescence. 2% Resorcin Ointment continued on legs - Hands which have improved considerably are to be dressed with Calamine lotion.

11-30-32 Noticeable improvement - in old areas especially hands - but a large area involving 1/2 right chest has appeared in last 12 hours with two 15 x 15 cm patches over scapulae. These are hard papular scaly eruptions - no vesicles or serum - and although are only few hours old look like chronic lesions - Their appearance was not related to any exposur

nor was there possibility of contamination by discharges from active areas.

On 11-12-32 an attempt was made to secure passive transfer onto skin of rabbit, without success, either by patch tests or vapor exposure - intradermal injection of 0.01 cc into the sensitized and control sites resulted in a marked acute inflammatory local reaction in control as well as serum treated areas. The cut 5 of 7 is evidently very irritating but in the case of a rabbit at least this irritating quality is not enhanced by application to areas which have been treated with sensitive human serum. Attempts at passive transfer into the skin of a young - (2 yr.old) monkey were equally unsuccessful on treatment with vapor and by patch method - intradermal injection of 0.01 cc as in case of rabbit resulted in a marked inflammatory reaction leading to necrosis of the treated skin areas - both control and serum treated - healed in 6 days.

12-1-32 Lesions chest - legs - hands and face same - all weeping at times - especially legs.

12-4-32 Seen by Dr. Zwick who recommended camomile tea for wash - a lotion and dusting powder.

12-7-32 Above treatment aggravated condition legs and patient discontinued application after 36 hours.

12-8-32 The new lesions on chest and back look more and more like a drug rash - compound Resorcin ointment discontinued - due to tar in same.

12-10-32 Chest and back lesions practically gone since discontinuance of Comp. Resorcin ointment and use of 10% Boric ointment.

12-11-32 Sent to Deaconess hospital - Elimination diet - rice - olives - lettuce, peaches, lamb and bacon - 2700 cals.

12-13-32 Very much improved - hands almost clear - considerable epithelial ization legs - had 1-5 gr aspirin tablet last night - resulted in edema tongue and lower lips - last few hours.

12-14-32 Legs improved - chicken, peas, and pears added to diet - 2500 cal

12-15-32 Hot milk and maltine given by error last night - legs and hands worse this A.M. to return to original diet. Back and sides are now entirel clear - legs under cradle without dressing most of day. Second set of passive transfer experiments done.

12-17-32 Condition same.

1	0	Pos.-8-48 hrs.	1	Miller serum
2	0)		2	Salt sol Merth control
3	0)	neg 48 hours	3	Serum and immune serum
4	0)		4	Serum and normal Rab. serum

#1 pain and burning in 15 minutes - edema - redness and subq. infiltration 8-48 hours with bronzing subsequently. On 12-18-32 areas 3 and 4 swelled markedly and showed subcutaneous soft edema for 4 x 4 cm area around them - and old rabbit serum areas situated 6 cm away showed same reaction - began about 5 P.M. on 12-18-32 the older injected areas of 12-9-32 reacted

[redacted]

somewhat less than the more recent ones - both reached height morning 12-19-32 coincident with onset attack of influenza - tapered off in 4 days - gone 12-24-32 from 12-18-32 to 12-23-32, itching was very marked and there were numerous papules both on the surface and adjacent to the lesions - These did not vesiculate and receded with the principal leaion. Areas 1 and 2 of 12-9 and 12-17 were not influenced during those changes in areas 3 and 4. The reaction seemed to depend on the presence in the skin of rabbit serum - both the normal and immune reacting to the same pitch.

From 12-17 to 12-24 Patient's legs improved tremendously and he was allowed to go home on 12-24-32. Put on full diet with instructions to take all foods at meal times - no liquor or foods between meals.

12-27-32 Legs dry - skin normal on calves - nearly healed at ankles - lesio at right angle mandible better - no weeping - almost well. Beef, potatoes, canned peas (with small amount milk and flour) white bread - butter - beans.

12-29-32 Drove for 1 hour - Bork chops for dinner - beginning about 8 P.M. legs itched and burned - swelled slightly.

12-30-32 Swellings legs increased - weeping began - lesion on right side face lighted up - ate salmon, potatoes, pound cake. Bed rest.

12-31-32 Increased pain, swelling, weeping.

1-3-33 Weeping diminished - legs improved today though swelling is still marked. Applying boric ointment past 3 days.

1-5-33 Seen with Dr. DuCasse - recommended Calomel gr 1/8 tid 15 minutes A.C. - Anaesthesia ointment 10 p in Lanolin and Bile salts gr V tid - restricted diet continued - no tobacco for 2 days.

Samples of Urine and Faeces from employee Standard Oil Company (Ohio)
Patient is a filling station attendant in Cincinnati.

Diagnosis: Gasoline dermatitis.

[redacted]

Urine	-	10-15-32
Pb found	-	0.05 mg.
Pb/Liter	-	0.02+ mg.

Faeces	-	10-15-32
Pb found	-	0.73 mg
Pb/100 gms faeces	-	1.52 mgs.
Pb/gm. Ash	-	0.11+ mg.

Reported: 11-4-32