## Production of Glue From Fish Waste

By LOUIS F. SMITH

Fisheries Experimental Station, Prince Rupert

management.

tributed to this knowledge are the furnish an answer. which seems to produce an even prize so highly.

Nevertheless, our knowledge of much progress. fish glue, its preparation and propa given kind will yield a good fish preparing glue will yield consistently satisfactory results.

Perhaps it is partly due to this unwilling to exploit the fish glue kinds of fish. types of fish waste and ways of fishing are so different from those on the Atlantic coast. A letter from the largest fish glue manufacturer at Glouwhen one recollects that no fish are skinned on this coast.

A survey of the present methods of handling fish waste indicated comes to the top. The lower layer the desirability of an investigation is drawn off and evaporated to a of the fish glue potentialities. To thick gluey consistency and, with an ever increasing extent the waste preservative added, forms the fish from the halibut and salmon fishing industries and such fish as the pilchard, dogfish and herring are of glues was made up using hali- ed, the glues made from leached being utilized for the production of but heads both leached and un- tock are considerably stronger. in the vast majority of plants in- soaked in alkali and then in acid n a glue is an indication of the volves the cooking of the fish with before washing, according to the amount of leaching the stock has steam under pressure, the pressing method of the adhesive research received and a glue with a high perof the liquid from the resultant committee of Great Britain. In centage of chlorides cannot be exmass, and the separation of the no other cases were chemicals ected to dry satisfactorily. liquid into oil and waste liquor, used. The oil is pumped to storage tanks | These glues were subjected to a but the waste liquor is run into the number of chemical tests, their vis- skin present, though the bone does sea. This liquor containing from cosity and reaction (pH) deter- furnish glue when given special one-third to two-thirds of the total mined and finally their breaking treatment. nitrogen of the fish waste and strength in a glued wood joint amounting to thousands of gallons found. This latter test was carried per year is lost.

From the standpoint of sheer tory of Vancouver to whose courtesy

Fish glue is a viscous, sticky enormity of the loss, this waste stronger than the wood. This is league championship yesterday afliquid varying in color from light would bear investigation. But the accomplished by a tool which holds ternoon from the Sons of Canada yellow to dark brown with its charpressed by esportance when chemical science force is applied to the other half, rather loosely played at times and sential oils. It is produced from fish shows clearly that any fish glue that the direction of the force being in both teams did some heavy stick waste, chiefly from fish skins, but might be obtained from the fish the plane of the joint. A shearing work, Nick Chenoski was on the also to some extent from fish heads. waste will be found in these waste force is thus applied to the glue mound for the Service Club and Only two or three companies in liquors and any method for obtain- film. The total force necessary to whiffed nine batters, while he al-Canada and the United States are ing fish glue from fish waste will break the joint apart is divided by lowed nine hits. He helped win his engaged in its manufacture and curtail almost entirely this loss. the area of the glued surface, giv- own game by collecting three hits. the methods they use are secret. Whether reclamation may be ef- ing a value that represents the one of which was a homer, that However, this veil of secrecy has fected most economically by pre- breaking strength in pounds per went through the fence in right been gradually lifted by scientific paring fish glues from the liquors square inch of the glued film. Ten field. investigators until today it seems as they are now available or by so blocks are broken and the mean Harry Astoria did the pitching clear that the secrecy of the pro- modifying the fish meal process value taken. cess of fish glue making can apply that waste liquors are obtained Six glues of the first series were was touched for 13 safe hits, he which need only be concentrated tested by this method and gave might have won the game had his to form a satisfactory glue is a values of 900-1500 pounds per support been a little better. The question to which comprehensive square inch. As a basis of compari- Sons made no less than 12 errors. and careful scientific work can son, a commercial animal glue of Ted Tite, playing third for the

fish glue? In what respects does per square inch. an inferior glue differ from a su
The forest products laboratory in Howe, Wendle and Mitchell Summary: Stolen bases. Moran hest back on the field, tackling with by Magistrate McNulty Mitchell 2: best back on the field, tackling with by Magistrate McNulty Mitchell 2: best back on the field, tackling with by Magistrate McNulty Mitchell 2: best back on the field, tackling with by Magistrate McNulty Mitchell 2: best back on the field, tackling with by Magistrate McNulty Mitchell 2: best back on the field, tackling with by Magistrate McNulty Mitchell 2: best back on the field, tackling with by Magistrate McNulty Mitchell 2: best back on the field tackling with by Magistrate Ma dustrial research, Great Britain. perior glue, and by what scale may reporting these results stated that did the best batting for the Sons. Tite. Jack McNulty. Mitchell 2: best back on the field, tackling with by Magistrate McClymont in cit These investigators have been engaged for the past three years in a we measure the difference? Must be glues took too long to set, 24 Howe connecting for a triple and by Walters played hard for the long to set, 24 Howe connecting for a triple and two-base hits. Fasson Mitchell by Walters played hard for the gaged for the past three years in a study of preparation of fish glue made with wooden blocks and test considered the values of the from fish waste and the properties the strength of these joints or will strength of the st the strength of these joints or will strength test comparatively high Eddie Smith got two singles also. Howe; home-run, Chenoski; struck with a splendid drive from a free freight claims, Canadian Nation the determination of the physical and stated that the glues should be but his work at second was not out by Chenoski 9. Astoria 6; base kick. Nakamoto will improve, and Railways, Montreal, and Mrs. Art better give than the secret methods which fish glue manufacturers tions before a trip west, and salls ods which fish glue manufacturers tions before a trip west, and salls one of his throng to the secret methods to these quest about 30 glues was made up, the tried to hit the tennis court with the tennis court with the tennis court with the trip west, and salls one of his throng to the secret methods of a trip west, and salls one of his throng to the secret methods of a trip west, and salls one of his throng to the secret methods of a trip west, and salls one of his throng to the secret methods of a trip west, and salls one of his throng to the secret methods of a trip west, and salls one of his throng to the secret methods of a trip west. tions before experiments on the temperature of cooking being from one of his throws to third. Frizzell of game, 1 hour, 55 min.; umpires, Christison all gave evidence of last night on the Prince George preparation of fish glue can make 176 degrees F. to 297 degrees F. made the catch of the game in Ratchford and Loblick.

satisfactory. We cannot with as- great the manual or fish, is impure maple blocks, values from 0 to 2800 surance state whether fish waste of gelatin. It is made by boiling up pounds per square inch being rethe skins and bones of the animals ported. Five of these glues gave glue, or whether a method which with water. The process has been values of over 2000 pounds per yields fish glue from one material carefully studied and accurately de- square inch. Further trial of these scribed for mammal glue and extensive testing, that a method of completed for fish glue there is no study of the results of these tests ilar. For the best results it is esbones) be fresh. It must be free with other tissues, and must 12 to 24 hours to wash out inorganic It has been stated in the literature salts. Care must be taken to avoid cooking for too long duration or at too high a temperature.

When these precautions are followed the process of glue making is fairly simple. The stock (usually fish skins) is leached, heated with coast as suitable for fish glue. This a little water for several hours, attitude may be readily understood usually to the boiling point and the mixture is pressed in an hydraulic press. The press liquors are lowed to separate until the

Following this procedure a series fish meal and oil. The process used leached. In one case the heads were The percentage of chlorides present

out by the forest products labora-

we are indebted for the results reported herewith. GYROS WIN

In this test, boards of fir or hardwood are glued together, placed in clamps and allowed to set and dry thoroughly. Blocks are sawn from the glued boards and are broken apart in an Olsen testing machine in such a way that the fracture occurs in the glue unless it is

good quality was reported to give a Gyros, turned in a nice game, get- S. O. C. How may we recognize a good strength test of about 1600 pounds ting a three-bagger and two

Eighteen of these were tested by It is known that glue, whether the forest products laboratory on though no such study has been tions of actual service. A careful doubt that the reaction is very sim- showed that no clear relationship existed between the strength of the sential that the stock (skins or glue and its physical and chemical) properties. In other words none of from impurities or contamination the chemical and physical tests be which are applied to glues can be leached in fresh running water for used as indicators of the strength. that the viscosity of liquid glues gives an indication of the strength. the higher the viscosity the stronger the glue. In 34 glues tested no such relationship could be observed.

Some light is thrown by the strength tests on the comparative value of the different methods used to prepare the glues. It is evident that heating under pressure is detrimental to the glue, but a boilng temperature, or very slightly ower for a period of 4-8 hours ields the best quality glue.

Glues made from stock that has not been leached do not dry satisfactorily. Though some of these glues give good strength tests after sufficient time for drying is allow-

The glue obtained from fish heads comes almost entirely from the fish

Two samples of glue made from salmon heads have so far proved unsatisfactory.

The results obtained with halibut head glues are considered so satisfactory that arrangements have been made to prepare large scale samples of this glue under plant conditions at fish meal plant. These samples will be distributed to users of glue and used under actual working conditions. This procedure should reveal any defects of the glue so far hidden and give some indication of its value as a commercial product.

The investigation has shown that a satisfactory glue can be made from fish heads and it is evident that the application of the process would solve the waste liquor problem. Experiments are in progress to determine the effect of the process on the fish meal and oil obtained under such conditions.

## LASTSHOOT OFSEASON

Lamb, Brass, Cameron and Wilson at McNicholl Creek Range Yesterday

The final shoot of the season of the First North B. C. Regiment Rifle Association on the McNicholl Creek ranges was held yesterday, he prize winning scores being as

M. M. Lamb W. Brass . W. Cameron Mr. Lamb received a gold medal: Mr. Brass, silver medal; Mr. Cameron, bronze medal; and R. Wilson,

There were eight marksmen out. Mr. Brass won the Regimental Cup and gold medal for the highest average score throughout the season. Mr. Lamb, as high scorer, won

the spoon for the day. About November shooting for the vinter months will be started on the miniature range.

Provincial Constable Robert Gibson and J. P. McMillan of the B. C. Packers staff returned to the city on Saturday afternoon's train after an absence of three weeks making an inspection of the salmon hatchery and spawning grounds at Babine Lake.

Service Club Captures Championship in Heavy Hitting Game

Gyro Club won the City Basebali

singles in five times at bat.

and chemical properties indicate satisfactory for ordinary purposes. up to his usual standard as he on balls of the forwards day after the best of the forwards day of the strength of the glue? An an- A second series comprising of muffed a comple of soft ones and Wild pitch. Astoria; hit by pitcher, were the best of the forwards, day afternoon's train in

the fourth, when he took one going at full speed in right field. The game was good to watch. the Gyros taking the lead only to

lose it twice before they finally stole away from the Sons in the seventh and were never in danger

after that.									
Box Score									
S. O. C.—	A	BR	H	P	AC	E			
Smith 2b									
Howe, lf	5	1				0			
Mitchell, c	5	2	2	8		0			
Wendle, ss.	4	1		3					
Frizzell, rf.					0				
Menzies, 3b.					1	3			
D. Stalker 1b					0				
Astoria. p.					1				
R. Stalker, cf									
Totals	39	9	9	24	10	12			
GYROS-	AF	3R	H	PC	) A	E			
Easson, 2b	5	1	1	1	1	1			
Moran, ss.	6	2	2	1	2	1			
Moran, ss	5	0	1	9	2	0			
Farquhar, 1b		5	2	1 1	1 0	1			
Chenoski, p	5	2	3	.0	3	1			
Tite, 3b	5	3	3	1	1	0			
Chenoski, p Tite, 3b Bury, cf	5	2	0	2	0	1			
Jim McNulty, lf.	4	1	0	2	0	0			
Jack McNulty, rf.	3	1	2	0	0	0			
PR-4 1	400			-	-	-			

Play on Saturday Closer Than 8 to moto was an impressive centre ha 0 Score Indicates

Junior League Football between High School and Booth Memorial School on Saturday resulted in a decisive win for faction of all and J. Comadina an iHgh School by eight goals to nil. The first half of the game was on Wednesday of this week well contested. Wingham opened 6:15 High and Borden will meet the scoring with a fine drive, and, a regular fixture. It is to be how soon after, Fong scored with a shot that there will be a good attendant that Lawrence should have saved. of older players and spectators Booth had more of the game from play hard and are always genuir sulted before half time.

In the second half Booth defended well, but towards the end the team found the going too much and the smaller boys were clearly outplayed and goals were added for High by Bacon (2), Greer, Wingham, Fong and Cameron.

football ability, but were unable to for Vancouver.

make little impression on the bi ger team.

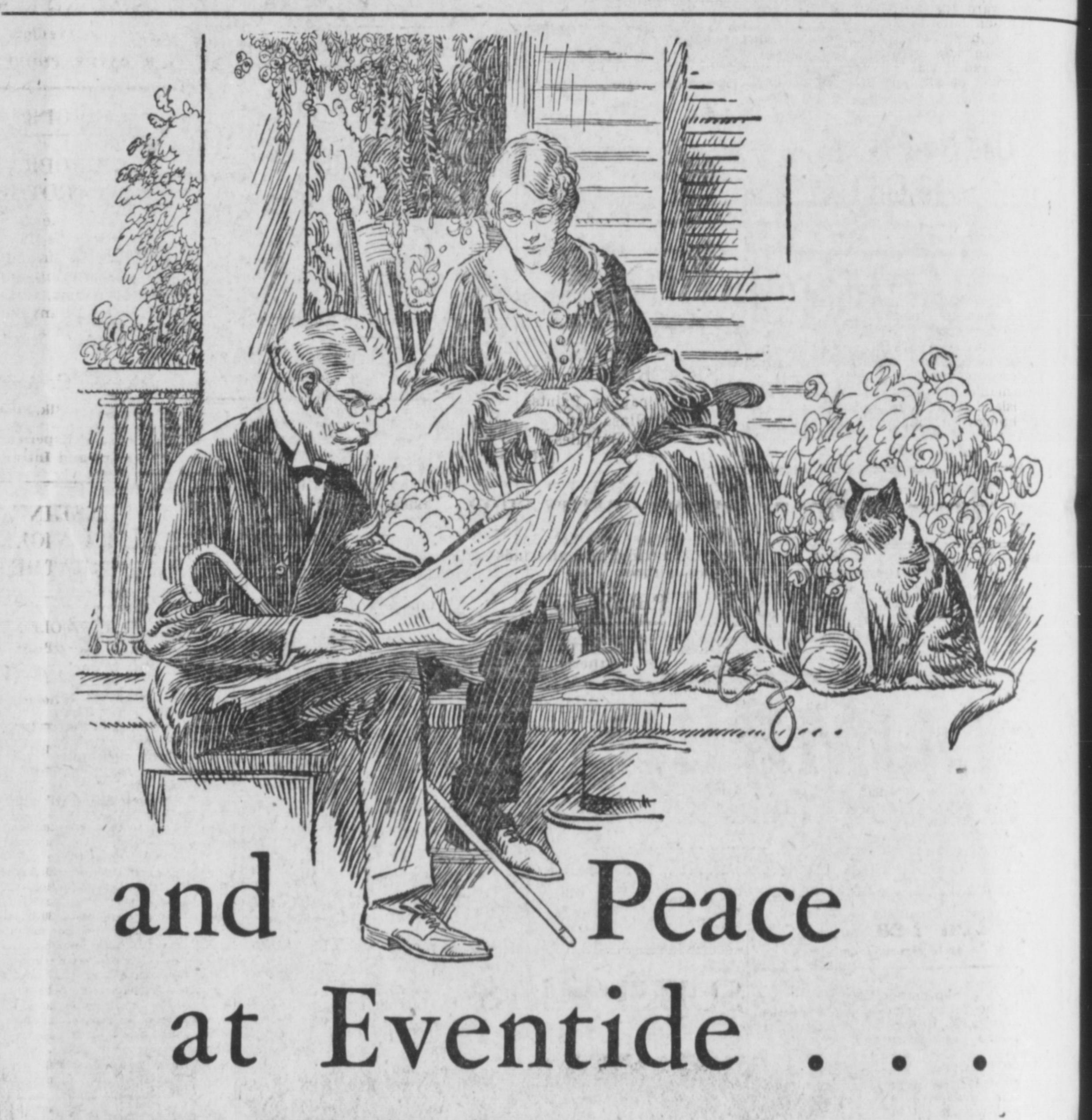
High School have a well balance team. Its defence was never sever ly tested, though Stinech did work to clear Walters' free kick. Fi was the more reliable back. while Greer got a nice goal, T forwards all showed to advanta with Wingham, Fong and Back

J. Campbell refereed to the satt

A. Stiles were linesmen.

The l	league standing:	
High Borden Booth	W. 2 0 0	L 0 1

the space of a few days on 0 0 0 0 4 0 5 0 0 9 In spite of the big score, Booth charge of drunkenness, .0 1 2 0 5 1 3 2 x—14 put up a good showing. Lawrence Singh, Hindu, was fined \$50, with



THE happy days of their early love ... the vows they took and the plans they laid . . . are still realities, though the turmoil and the struggles now are over.

For, out of their plenty they built up a competence for their declining years. A Life Insurance policy opened the way towards independence . . . with sure and constant protection against want, should either be taken before their plans ma-

tured. And now they enjoy

together the fruits of their forethought.

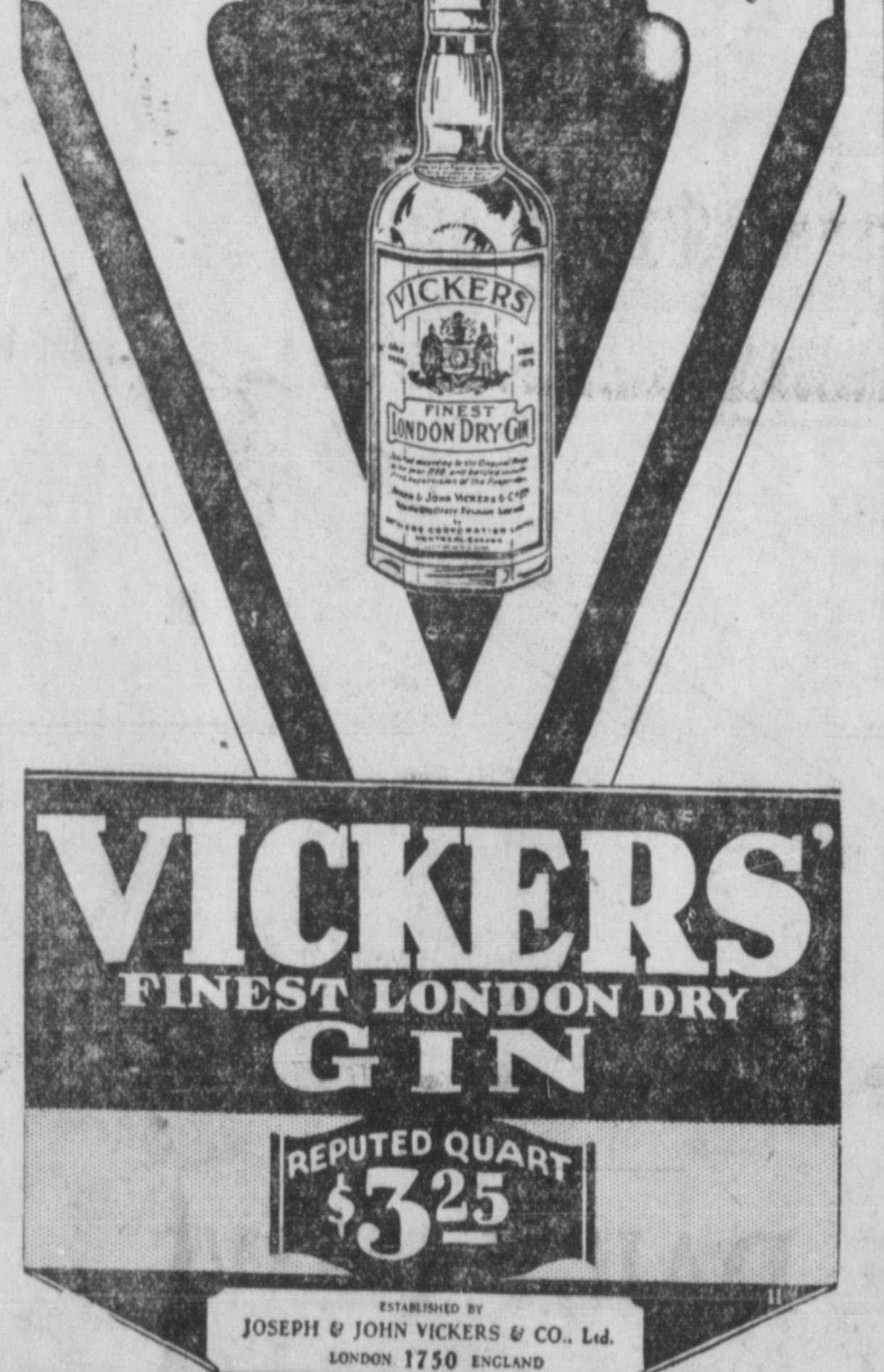
All we who now are young, should we be spared, will one day grow old. Our hands and hearts will grow tired and we shall long for rest and relaxation.

Life Insurance offers the only certain safeguard against the fear of privation. It will guarantee such simple luxuries

as age may crave. It will bring us happiness and contentment through the later years, and peace at eventide.

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