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In This Issue:

"WAR BUSINESS"—A Review of the Armament Scandal

Test-Tube Detective

By CHARLES LUGRIN SHAW

MURDER was least suspected when, a score of years ago, a businessman in a Western Canadian city notified police that his wife was missing. He had returned from a short trip to find her gone; and the servant, the only other occupant of the house, was unable to account for the woman's absence.

Police investigators and friends of the family surmised at first that the woman had gone to visit relatives or that she had met with an accident. Suicide was improbable; there seemed to be no motive for that. As for murder, why, that was ridiculous!

The case provided a several days' mystery. Balked in their efforts to substantiate their earlier deductions, police officials in desperation sought grounds for developing a crime theory. The servant was placed under arrest, but he protested his ignorance so convincingly that interrogators wagged their heads in frustration.

"We've tried everything else," someone in authority remarked. "We might make a sort of chemical analysis of stuff in the house. You can't tell; we might find something."

And so, as a final resort, the house was turned over to the city analyst's department for examination. One of the men put on the job was a slim, fair-haired youth whose chief everyday duties lay in the prosaic business of analyzing milk for butterfat content and searching for bacteria in food offered for public sale. His knowledge of crime was limited almost entirely to what he had read in newspapers and magazines, occasional visits to the police court in the course of his official work, and conversations now and then with police department operatives.

While old-fashioned detectives, still moving ponderously along a blind alley, regarded his mission rather sceptically, the young man went to work, looking for evidence; and what he found converted what had been a seemingly commonplace disappearance story into a sensationally headlined front-page murder case. Applying his chemical knowledge and his natural diligence to the apparently inconsequential task of analyzing odds and ends of furniture, the young man discovered: (1) Traces of recently-shed human blood on a carpet. (2) More of the same blood on a nick in a carving knife. (3) Still more of the same on the walls of the kitchen, which had apparently been imperfectly scoured within the last few days.

Faced with such evidence, evidently believed to have been carefully eliminated, the accused servant promptly realized the futility of his assertions of innocence and confessed to having murdered his mistress and disposed of the body in the furnace.

Science vs. Psychology

THE SLIM, fair-haired youth who found the bloodstains was John F. C. B. Vance, who, in his dual capacity of city analyst and detective inspector in Vancouver, is today regarded as the nemesis of organized crime in the Pacific province and one of Canada's outstanding crook hunters. His application of science to police work has gained him an international reputation.

Slightly built, soft spoken and quiet mannered, reticent to the point of shyness, Vance is the antithesis of the usually accepted type of hard-boiled professional sleuth. Knowing Vance, it would be hard to visualize him making an arrest, slipping on the steel bracelets and "grilling" a prisoner. Happily, Vance is spared such details. Most of the time he works behind the scenes, in the seclusion of his laboratory with its $80,000 worth of ultra-modern scientific equipment.

Vance is essentially an inside man. About the nearest he ever came to physical contact with a criminal was when, a few weeks ago, a bomber tried to blow his home to atoms as a gesture of revenge for one of the detective inspector's smart jobs against the underworld. Vance was quick enough to snap off the burning fuse before the explosion, but all he caught of the fleeing bomber was a hurried glance.

Quite often Vance never sees the men against whom he obtains evidence; but, working in the background, he has been responsible for more convictions in serious criminal cases than any other British Columbia law officer in years. But he takes no special interest in the number of men he sends to prison. He's not out for a record.

"Our bureau," he says modestly—he always gives credit to the bureau of science rather than to himself—"has been successful chiefly because we have such invaluable allies on our side—chemistry and physics.

"The old-time detective was obliged to depend almost entirely on his knowledge of human nature to arrive at his conclusions by deductions. Well, a knowledge of psychology is useful, if not invaluable; but even the cleverest detective relying solely on that is apt to be in error once in a while. But with chemistry the facts established are definite and final. The test tube never makes a mistake. The human being—I don't care how smart he is—who tries to match his wits against the spectroscope and other scientific devices we have to reveal telltale evidence, is a fool."

If you don't quite grasp Vance's point, take the case of the Yukon butcher who was arrested by officers of the Royal Canadian Mounted Police not long ago. The butcher was accused of murdering a woman by hacking her with a cleaver. But the Mounted Police couldn't get a confession. Instead, they got an unpleasantly plausible explanation for the bloodstains they found on the butcher's boots and which they had hoped would convict him.

"I'm a butcher," protested the suspect. "Naturally there was blood on my boots. There always is. Steer's blood perhaps, or a hog's. I do my own slaughtering and I'm in the shop all day. I can't avoid contact with blood."

But the butcher hadn't counted on Vance and his laboratory. The blood-stained boot was sent to Vance, and after a while he had a scientific report presenting irrefutable proof that the blood was not that of a steer or a pig or any other abattoir specimen, but of a human being. Not only that; proof was given that the blood on the boot belonged in the same category as that of the cleaver-hacked woman. Obtaining a complete confession was a mere formality after that.

Dubious About Fingerprints

DETERMINATION of the category of human blood, according to Vance, is a simple procedure; as that other master, Sherlock Holmes, would say, "elementary." But science has not yet progressed to the point where it can say definitely whether a certain bloodstain was left by this or that individual.

"The chief value of our blood tests is that it helps us to eliminate," says Vance. "There are a certain number of blood categories. Yours may belong to the same as A's, but be different from B's. Suppose you and A and B are all suspected of a crime, and bloodstains of the person who committed the crime are our chief clue. If the bloodstains, according to our test, belong in B's category, that doesn't necessarily convict B, even though it may make the situation rather embarrassing for him, because some unknown person might have been at the scene of the crime and left his stain. But it does make things much easier for you and A, doesn't it? You and A, you see, are eliminated."

Incidentally, Vance doesn't place a great deal of faith in fingerprints. Not that he condemns them outright, but at times he is just a bit sceptical. For one thing, they are so difficult to get. And he says there have been cases where two sets of fingerprints from different persons were found to be identical.

"Fingerprints are apt to get smudged, too, even when they are being officially recorded in police stations," says Vance. "Crooks are pretty smart that way. They have a habit of putting powder on their thumbs and fingertips so that the impression is of negligible value."

Professional crooks never leave fingerprints, anyway, Vance will tell you. They are always careful to wear gloves in jobs such as safe-cracking. In fact, almost every premeditated crime is carried out with covered hands these days, unless the criminal has taken leave of his senses or

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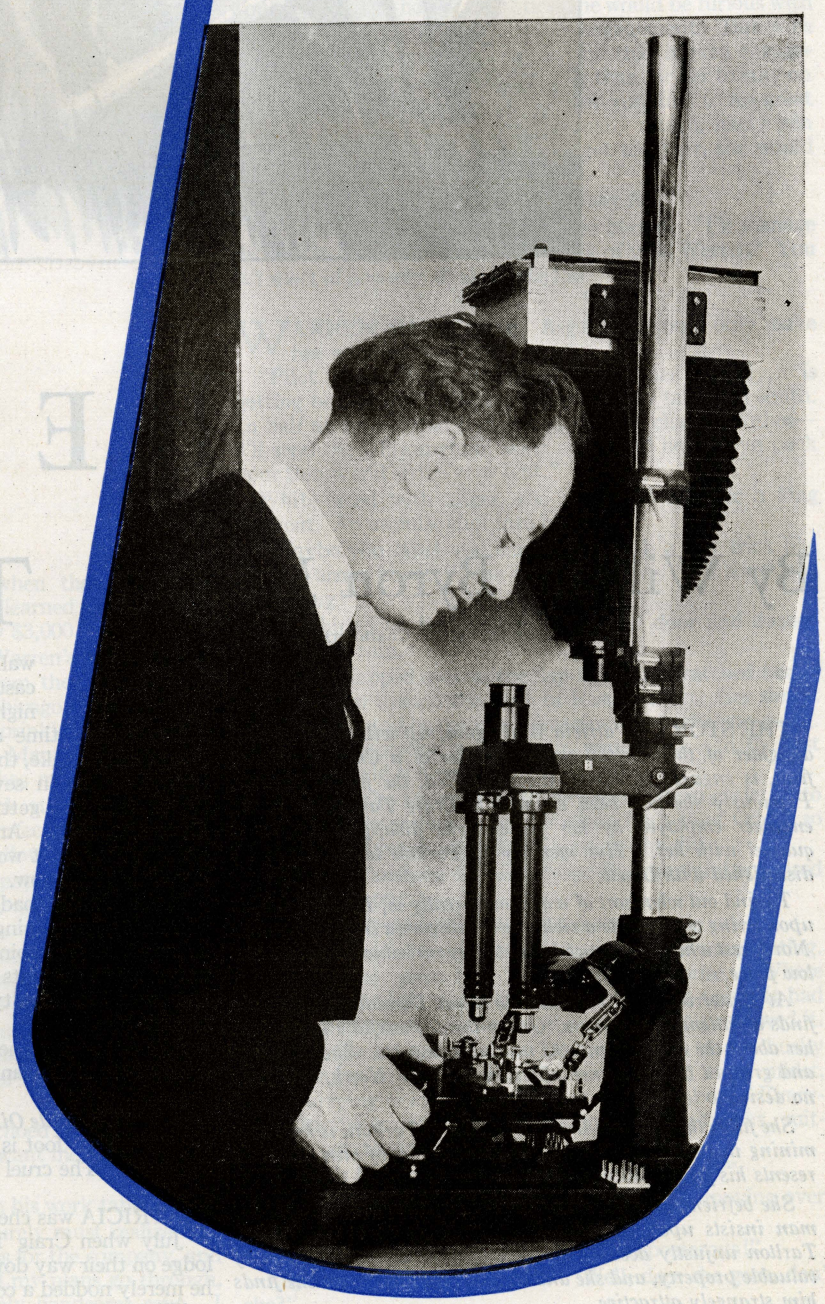

John F. C. B. Vance, Vancouver's scientific detective inspector, in his laboratory.

nected the R. H. C. camp with the Supply and Transport Depot at Ul.

"Are ye there, Brown?. . . Ah was speakin' to ye about *bhoosa* the ither mornin' . . . Do ye mind repeatin' what ye said?"

He heard the faint voice from the Supply Depot.

"Can't let you have a maund. There's a famine threatened owing to the lateness of the rains. Prices will be rocketing in a week or two. Down here we're offering two rupees a maund and can't buy even at that price . . . I'm sorry."

"Ay, Ah thocht that was whit ye told me," said Quartermaster Sergeant Macpherson, and rang off.

Test-Tube Detective

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happens to be a novice. Vance regards rather contemptuously the tremendous stress placed by fiction writers on fingerprints registered on revolvers. If you question him on the point, he will take down a gun from its rack in the police laboratory and ask you to examine it. You will find that most of the gun handles are rough-surfaced to give grip, and consequently the finger impressions are lost. A trigger, Vance will demonstrate, is too small to record anything worth while.

Gunprints

BUT LACK of fingerprints on a gun doesn't mean that Vance and his scientific detectives are helpless when they find such a weapon at the scene of a crime. He will tell you that such a discovery is invariably regarded as a piece of singularly good fortune—almost too good to be true, and a very tough break for the man who last used the gun.

Vance and his assistants long ago took important steps beyond the more familiar aspects of the science of ballistics as practised in most police stations. One of the devices that has been most effective is a boxlike structure about three feet wide by four deep, with several layers of cotton-padded screens suspended from the top like back drops in a miniature Punch and Judy stage. A paper target is pinned to the front screen. When a suspected gun is brought to the laboratory it is thoroughly inspected for other characteristics, the bore is photographed, and the weapon is fired at the target. The bullet is then picked from the pads and examined, too. From the fragments of spent metal Vance is able to deduce whether the specific gun was used in the specific shooting.

Vance has made a specialty of what he calls gun-printing. In his opinion, gun-printing is easier than fingerprinting and can be far more accurate.

"Although a certain arms company may manufacture thousands of firearms according to an identical model, every gun is different," says Vance. "The weapons may look the same in the store window or in your hand, and of course, they fire the same bullets. But the grooves and lands of the bore are different. In the manufacturing process the drill that is used to produce the bore never leaves exactly the same impression. The revolving drill always leaves a different 'scratch' or stops at a different point. And this impression is transferred to the bullet as it whirls through the bore. We have instruments so exact that we can tell by examining the spent shells whether the bullets were fired from a certain gun."

Dust as Evidence

BLOODSTAINS, fingerprints, gun marks —these are all more or less familiar items of police court evidence, even though Vance has carried them beyond the usual routine by several stages. The evidence that seems to fascinate Vance more than anything else and that has figured in some of his most surprising convictions includes such oddly commonplace objects as grains of plaster, particles of glass, splinters of wood, rust stains, bits of torn cloth, and dabs of paint.

A suspect was picked up recently, charged with breaking into a store in a rather unusual way. It was claimed that he had gained entrance to the store by breaking through the floor from a room he had rented above, then dropping through the ceiling, gathering his loot and then returning hand over hand by rope by the same route from which he had come. The suspect had an alibi, and police who arrested him were perplexed. It became a case for Vance.

Vance asked officers to examine the cuff of the suspect's trousers and bring to him whatever they found. What they found seemed, to the unpractised eye, to be merely so much dust. But Vance used his scientific instruments, compared his findings with the result of an examination of plaster and splintered wood in the wall of the plundered store. They were identical. The alibi tumbled soon after that.

Then there was the case of the cracksman who was charged with dynamiting a beer-parlor safe. They found explosives in his room, but they couldn't prove anything from that.

"Did you find anything else?" asked Vance. "Anything at all?"

"Nothing but some coins," said the arresting officers.

Nothing is too insignificant to be ignored by Vance. He took the coins, subjected them to microscopic and spectroscopic test, discovered a trace of mallic acid.

"Mallic acid," remarked Vance, "is a constituent of beer. Let's check up on the coins in the beer parlor."

The check was made, the chemical reaction from the test was the same, and the necessary tie-up between the safe-cracker and the cracking was established.

A Fragment of Fabric

HIT-AND-RUN drivers have found Vance to be their relentless pursuer. All they need to leave behind them is a fragment of glass or perhaps a few shreds of cloth, and they may count themselves already on the way to the penitentiary. There was the recent case of a drunkard who raced his car over a city bridge and ran over two young women, killing both. Without stopping, the driver continued at top speed and didn't bring his car to a halt until some seventy miles out of town. Then he poured gasoline over the automobile and ignited it. In a few minutes the death car was a mass of charred wreckage.

Vancouver police made their investigations according to the usual formula. For a while the case seemed hopeless. The driver was eventually arrested because he had been acting suspiciously in the little town near the spot where the car had been burned. But he protested his innocence and gave a plausible alibi. Unless his car, which was merely a heap of junk, could be directly connected with the crime there was no evidence against him. The police might have all the suspicions in the world, but they could not hope to get a conviction merely because of what they thought.

Then Vance was put on the job. He went to the spot where the car had been burned. With him he took the big black suitcase which always accompanies him on errands of this kind. Its contents are an amazing assortment of unusual instruments—specially fashioned rakes for combing through ashes, high-power searchlights, toxicological devices for discovering traces of poison, and so on.

By the time he had finished his examination, not a square inch of the ashes or tangled frame of what had once been an automobile had escaped Vance's scrutiny. He didn't find very much, it is true, but it was sufficient—a fragment of fabric that had been wedged in a niche on the dashboard, and a few particles of paint scratched from one of the very few places on the car untouched by the flames.

"If we can find that this piece of fabric corresponds with any part of the clothing worn by one of the victims, it will be very useful," remarked Vance. "If we can find a trace of paint on the garments of the victims that corresponds with the paint on the burned car, our case will be stronger."

Sure enough, these items tallied, and, confronted with the evidence, the prisoner confessed.

Convicted by Broken Glass

SEVERAL DAYS later Vance had a similar fatality to deal with. Two men had been killed, and the hit-and-run driver had continued on his way, imagining that he would never be found out. Some fine particles of glass found on the road near the two bodies were all that Vance needed this time. The particles fitted perfectly into a tiny, hardly noticeable hole in one of the headlights of the suspected car.

To fit two pieces of glass together so that they satisfy the human eye that they correspond is not sufficient for Vance. The spectroscope and microscope, however, may give the needed confirmation. No two pieces of glass will crystallize in the same manner when cooled in the manufacturing process, and this accounts for the fact that they will not fracture in the same way either. Vance's tests take into account this fact when broken glass, as so often happens, is police-court evidence. His experiments in glass breakage and cleavage are among Vance's most important achievements.

A New Science

BUT THE laboratory feat that may be destined to give Vance his greatest fame is discovery of a means to detect crime without any concrete evidence whatever—without fingerprints or gunprints or blood-stains or bits of glass and cloth and so on; even without psychological deductions.

Complete success has so far eluded him. Vance modestly will tell you that he and his fellow experimenters are still merely on the outside fringe of this new science that, because of its complete novelty, is difficult to describe.

"We are working on the assumption—and we have good reason for such—that every individual possesses a distinctive aura, an indefinable substance that is communicated to every object touched or approached," explains Vance. "Perhaps it is the same substance that provides the scent for bloodhounds and which in the past has always been too elusive for human analysis or service, except perhaps by Indians compelled by environment and skilled by generations of practice to make all possible use of nature's agencies. Chemical tests have encouraged us to believe that every individual has a different aura or scent. To find a means of picking up this aura and classifying it is still to be done, but we are making progress."

And when that has been achieved, when the detective, arriving at the scene of a crime and applying his "sniffing machine" to the job, is able to announce with confidence, "This was one of So-and-So's jobs. His scent betrays him"—when such a thing as that becomes possible, and Vance seems to think it will, what possible chance has the poor crook got to make crime pay?