

"Seaward!"

Malcolm Jameson

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"SEAWARD!"

by Malcolm Jameson

Two rival chemists—two rival governments—inorganic vs. organic chemistry and—the sea!

"Read 'em and weep, Silvy!"

Heine Woerlein gleefully tossed two neatly bound booklets onto the reading table, a triumphant grin stretching from ear to ear. Sylvester Upham, his roommate, jerked his head up from the microscope to which his eye had been glued, and began undraping his long legs from about the stool on which he was perched. The lanky "Silvy" faced his jubilant associate inquiringly. Then he recognized the booklets. They were their theses—back already, graded.

The exuberant Heine was displaying his own, the big blue "A" with a "Superlative Work" scrawled across the title page standing out like a Neon sign. Sylvester's eye sought his own. That was decorated by the letter "B", and the comment

was "Could have been better." He took it in, half suspecting it was one of Heine's jokes. Perhaps his work "Transient Mutations" could have been better, but even as it stood, he didn't see how the dull subject "Neglected Potentialities of the Silicoids" could have rated an "A."

"That proves something or other," crowed Heine, dancing.

"It proves, you big fish, that when you submit a thesis to a prof that's nuts about silicoids it pays to write about silicoids! Now if he——"

"Yeah, I know. If he could see any use playing around with a lot of deformed hormones and inverted enzymes, you'd have led the class. It's applied chemistry we're studying, pal, something somebody can use. You'd better come down out of the clouds and start thinking about how to stick to a pay roll somewhere. Don't forget, next month we'll be out in the cold, cold world. Out there, it is not how interesting it is, but will it pay!"

It was the old battle. The two had roomed together for five years, and the good-natured conflict between the practical-minded Woerlein and the dreamy Upham had raged unceasingly. At bottom, each had the greatest respect for the other's mentality, but that circumstance only rendered the friendly rivalry the keener.

When they left school, Woerlein went straight into the laboratories of the great Middle-Europe Chemical Cartel, while Upham accepted a professorship in a small Scottish college. The former, prodded by the unrelenting system of

the armylike Cartel, immediately started producing, with the regularity of a metronome, miracle after miracle of development in the field of industrial chemistry.

Upham's progress was not so swift or so consistent. But he had leisure and the freedom to experiment in his own bold fashion in a realm unthought of by the industrialists, with the result that every five years or so he was able to announce to a breathless world some unprecedented combination of molecules or living cells. Such a discovery would at one leap put him ahead of the plodding Woerlein in their race toward fame. They wrote each other frequently, and now and then met. It was always a merry occasion, full of boasting and friendly gibes.

It was when they were past forty that Upham's extraordinary plant creation, the Omniflor, was given to the public, an event that placed him definitely in the forefront of Britain's bio-chemists. This remarkable bit of synthetic magic produced not only a super-rubber from its stalk juices, a long-fibred natural silk from its seed-bolls and a palatable and nutritious fruit, but the substance *purprephyll* which gave the odd violet color to its leaves also generated a powerful essential oil which was found to be the perfect specific for cancer. Upham, now bald, bearded and chronically stooped from trying to adapt his six-feet-three of gaunt frame to the conventional limitations of furniture and architecture, had followed up his triumph by sending a taunting telegram to his old side-kick, Woerlein, mailing at the same time a smallish bale of press clippings. Back came the answer.

GOOD WORK. WHAT FERTILIZER DO YOU USE?
REGARDS HEINE.

And so it went. Upham grinned when he got it. He knew his thrust had been well parried—for his Omniflor would not seed without *Protogen*, that mysterious compound made by the Middle-Europe Cartel. *Protogen* was the brain-child of Heine Woerlein, the wizard of the Continent.

Immersed in their research, the wasteful orgy of another great war was on them before they knew it. The Central Alliance, a combine of Continental autocracies, had determined to crush the last of the democracies. These, in turn, allied themselves together and fought back. It became crystal-clear in a very few months that this conflict was only soluble through the extermination of one or the other of the participants. It was a war of whole populations, one in which quarter was neither asked nor given. Two distinct ideologies, two technocracies, two civilizations were grappling, and the future of the world hung on the outcome.

It was inevitable that the two scientists should find their services commandeered by their respective governments. Woerlein, being more practical, was made a general on the staff of the High Command. Upham, shrinking from administrative duties, accepted a commission as colonel and fell into the role of advisor to the Chief of Chemical Warfare of the Allied Democracies, a General Amos Canby.

Under the circumstances, communication between the former roommates virtually ceased, although once in a while they did manage to exchange greetings through another classmate who lived in a neutral country. Mainly, they kept track of each other's activities through recognition of new and ingenious methods of offense and defense. As was to be expected, the Central armies had sprung several surprises that clearly showed the chemical bias of Heine Woerlein—the inorganic field—whereas Upham's counter measures reflected his own tendencies, the manipulation of living organisms.

Honors were about even, and the war still dragged wearily on without note-worthy advantage to either side until the Centralists very nearly conquered by their introduction of the "glassy death." Upham first heard of this in his secluded laboratory hidden in the recesses of a Labrador fjord when he read the frenzied dispatch of his army superior General Canby. Without warning, tens of thousands of Democratic soldiers had stiffened, suddenly paralyzed, and the paralysis passed quickly into a rigor. Within a week, the stricken men's tissues were gradually transformed into a substance much like glass.

The gloating code message which the exultant Heine could not resist sending his old antagonist of the classroom gave Upham the clue. Their neutral intermediary sent him a slip of paper written by Woerlein to be forwarded to Upham. It reached him in the same week as Canby's urgent appeal.

The message read: "A/B equal C/D. That proves something or other!"

Like a flash, the memory of the day when they received their thesis marks glowed in the mind of Sylvester Upham. The plain English sentence was the key to the code. Translated, the mathematical equation signified: "Just as my grade of 'A' was superior to your grade of 'B', so the Centralists are superior to the Democrats." In like manner!

Upham radioed the university for a verbatim copy of the Woerlein thesis. In that youthful work of over two decades ago was the suggestion of certain possible uses of the silicoids. Now it had come to fruition—in the "glassy death."

In another week, Upham had forwarded to General Canby a full analysis of the "glassy death" with directions as to how to nullify that malignant, ray-induced disease. Once more the war fell back into its previous condition of wasteful stalemate. Prompted by the reference to the almost forgotten college theses, Upham started his return message to his old side-kick, Heine. It read: "Your arithmetic worse than ever. True formula is expressed by $H/H; C \text{ equals } O.$ "

With this cryptic message on its way, Upham dug out his own adolescent thesis and began its intensive study.

From that day on, a deep silence was all that could be had from the Democratic laboratory in the frozen north. General Canby felt that the counteraction of the "glassy death" was all well enough, but after all, it was a purely negative measure. Something more aggressive was urgently needed. He flooded the air with appeals to Upham to provide him

with something more. The other arms of the service were slowly but remorselessly being driven back. It was up to science to devise the new weapon that would overwhelm the enemy and turn the menace of defeat into victory. That was Upham's job.

Canby's imperative messages to Labrador either evoked no response, or else a meager "Progress satisfactory"—a message maddening in its vagueness, conveying nothing.

Canby turned his routine duties of stimulating the production of poison gases and other ordinary chemical activities over to subordinates, and arranged for a cruiser to take him to Labrador. General Canby was a business man, primarily, and he had never fully trusted his distinguished colonel advisor. The suspicion was kindling in his mind that the eccentric scientist might have forgotten all about the war and had become immersed in some characteristic scheme of his own, such as altering the genes of seaweed so that it would produce honey.

As the *Viper* turned her bow in toward the entrance to the fjord that indented the barren, glacier-stripped coast of Labrador, General Canby's chubby, plump form was on the bridge, his eyes squinted beneath a worried brow, scanning the inhospitable shore for the first sight of the camouflaged buildings that housed his most important experimental station. On the forecastle, men were making ready the lines for docking.

Abruptly the curt order of the captain of the *Viper* cut the silence. "Full speed astern, both engines!" Dead ahead there

was an acre of tiny ripples, the indication of a shoal or considerable rock just awash. Everyone on the bridge was studying the twinkling waters through glasses.

"A school of fish, sir!" reported the quartermaster.

"Rats!" exclaimed the captain, in the same instant.

And rats they were, hundreds of them. As the onrushing stem clove the water under the renewed push of the screws, the *Viper* forged ahead, split the approaching patch of roughened water, and went on through. General Canby and the captain rushed to the wing of the bridge and gazed down at the swarm of swimming animals slipping past in the quickwater. Rats, spotted brown rats, swimming vigorously, some clutching a moment at a seam or rivet of the cruiser's side as it slid by them. In the wake astern, the two halves of the sundered school reunited, and as the ship drew away toward the dock, the watching men on the bridge lost to view the area of tiny wavelets. The school of swimming rodents had gone on out into the broad Atlantic.

"Must be fumigating up there," observed the captain dryly, waving at the laboratory on the crest of the hill.

Canby made no answer, but he was thoughtful. What could Upham be doing with rats? The vagaries of that man's mind were unpredictable. Canby pretended a patience he was far from feeling, while the ship was being placed alongside the dock.

He left his aides on board, and pushed on up the rocky path alone, panting a little from the arduous ascent. When he reached the crest and had passed the sentries at the gate, he noted with astonishment that the yard surrounding the main building contained many wire pens. Some of them were filled with the same brown rats the *Viper* had met, others were empty. It was just as Canby had feared. Upham had gone off on one of his tangents—and at such a time! Rats, indeed, when the fate of the world was at stake!

It was in the far gallery that General Canby found his man. The lean figure was bending over a huge ledger, the straggly, bifurcated beard hanging down ludicrously over the trim army uniform. Upham was making entries in the ledger from a sheaf of loose sheets. Canby could not fail to be struck by the contrast of this man's impractical, scholarly countenance with his military garb. Here was another of the absurdities of war. This man they needed—and to pay him adequately, he must be given rank, for the War Office insisted such important work must be under army control. Control! Even a greater absurdity. A man like Upham was controllable by nothing except his own whimsical interest.

General Canby approached the writing man upon whom he depended so heavily, casting a critical eye about the littered work tables as he threaded his way among them. Everywhere lay rats, dead rats, in all stages of dissection. On one table was a large cage, like a parrot cage, containing a half-dozen live ones. They were brownish in color, almost yellow, and spotted with dark spots.

"Just in time!" called out Upham, gayly, hearing his approach and looking up. He was as matter-of-fact in manner as if the conversation had just been resumed after a few minutes' interval. It had been more than three years since Canby had deposited him here and put the station at his disposal. General Canby was a trifle nettled by the informality of the greeting, and after seeing what he had seen on the way in, he was in no mood for pleasantries.

_____ "If you are wasting your time on Bubonic Plague carriers _____"

"Dear me, no!" disclaimed Colonel Upham, in mild surprise. "That is too ineffective. Besides, I understand it is considered unethical to kill people by ordinary disease germs. I have the book you gave me, you know. The one on the Rules of War. It is all right to shoot, stab, bomb, strangle, burn—all those things—but germs are out. Not orthodox! But I haven't found anything in the book about this. It couldn't be, because I have just found out about it myself. I got the idea from Heine——"

"Heine?" bristled the general.

"Yes, Heine—Heine Woerlein, my old roommate. You know. He is head of Chemical Warfare on the Central side. We did our theses together. That 'glassy death' stunt was his idea—he thought of it twenty years or more ago. So I'm working off one of mine on *him*." Upham chuckled, happy as an undergraduate. "Only I don't think he's fast enough to unravel mine as quickly as I did his."

General Canby was nonplused. He was confronted with a situation he had not expected.

"Do you mean," he said, aghast, "that while we are fighting for our very existence, you are frittering away your efforts prolonging a silly schoolboy feud? Personal enmity has no place in war!"

"Enmity?" echoed Upham, his mild blue eyes widening in astonishment. "Why, Heine and I are the best of friends. The only trouble with him is he's blind to the possibilities of mutants in organisms. But he'll know better—soon."

"In the meantime our armies are pushed back every week," said General Canby, bitterly, not knowing quite how to handle this queer technical expert. "When they open the big drive next spring, we're done. And all the while you are playing with rats, to prove some point in a childish squabble!"

"Not rats, lemmings—lemmings from Norway!" Upham turned his absent-minded gaze toward the window. Then his expression became at once alert. He jumped to his feet, excitedly, and ran to the window, shouting.

"Stop him! Stop Okkuk! Head him off before he reaches the shore!"

General Canby followed to the window. He could see an Eskimo plunging down the rocky slope, falling occasionally, but each time picking himself up and resuming his headlong

flight toward the fjord. He saw him bang blindly into a post, stop and tear at it savagely until he had uprooted it and flung it to one side. Then the fleeing man dashed on to the brink of the fjord and dived into it. Canby could hear Upham's voice behind him, telephoning to the soldiers on the dock. In a moment a boat was putting out, pursuing the fast-swimming Eskimo.

Upham joined General Canby at the window. He pointed down to a trough partly filled with grain. The trough was in one of the empty pens that had held the tawny rats.

"Okkuk is something of a petty thief," Upham explained, "but we should forgive him. He has saved us the embarrassment of having to ask for volunteers. He has evidently stolen and eaten some of my experimental food. Come, I will show you."

General Canby followed Upham through the halls of the laboratory building. He looked into a huge refrigerator piled waist-high with the dank bodies of the dead little animals. He was shown the pens of the living ones, and glanced through stacks of closely written notebooks. Upham was lecturing as they walked. He talked of hormones, a new and unthought-of variation that only developed in fluctuating and distorted magnetic fields.

He displayed microscopic slides, charts of curves correlating sunspots and auroras with selected terrestrial plagues and migrations. Canby saw the weird, fantastic arrangement of oddly constructed electromagnets suspended in all positions around jars of wheat, baskets of moss, other

substances. In an hour's time, he had lost the feeling of annoyance he had brought with him into the building. It had been replaced by a consuming interest. The interest grew into enthusiasm; here was the road to victory, and General Canby found himself slapping the lank colonel on the back and crying.

"You've done it! This is what we have been hoping for!"

The *Viper* carried a contented Chief of Chemical Warfare back to Europe. His task was to lay this plan before the General Staff and get their cooperation. Colonel Upham wound up his work in the laboratory and departed for Chicago.

The purchasing agents of the Democratic armies had already engaged many millions of bushels of wheat and had contracted for its milling. In that city of abundant power supply, manufacturing facilities, and vast grain storage capacity, it was a fairly simple matter for Upham to have his special electromagnets built, and the ponderous machines rigged at predetermined points about the grain elevators. Some were placed on cribs erected on the roofs, others on tall structures of heavy scaffolding located at carefully computed angles to the sides. When they were all in place, and the cam-driven battery of rheostats connected, Upham gave the order to let the amperes flow.

The resulting wail of protest from householders whose radios were flooded with strange, oscillating static was dealt

with by a friendly city government. Upham stayed in the city, keeping a watchful eye on his power charts, testing samples of flour from time to time as it was milled, and making further studies of its effects. The magnetically mutated hormones were present in every sample, in abundant concentration. His reactions were invariably what he expected. There was no more to be done in America. He let them barrel the flour, and later saw it descend into the hold of ships in New York harbor. Escorted by a squadron of destroyers, he crossed the Atlantic with his shipment and supervised its placing in the warehouses of Le Havre.

General Canby was having a harder row to hoe. First, the General Staff snarled at him, and the War Ministry laughed him out of the room. But he went at them again and again. His winning card—and he knew that they, too, knew it only too well—was that they had no alternative.

Spring was near, and with it would come the last Big Push. All winter they had barely managed to hold their lines, dug in behind barbed-wire, fighting the miserable war of attrition in the mud. Elsewhere on the Continent, one after another of their allies had crumpled, been overrun, utterly crushed. Each such victory made more enemy troops available for the grand final thrust on the western front. As the roads became more passable, the enemy would be concentrating for the drive that would make the word "Democracy" a historical term.

As matters stood, there was left but the desperately held territory of the southwest half of France and a thin strip of the Channel coast protected by a hard-held line from Ostend to Rouen. Thence, the battered, soggy trenches straggled

across France through Orleans toward Lyon. Paris had been lost the year before. The British clung doggedly to the torn and shattered sector of shore opposite their island. It was their last buffer against invasion.

It was when they thought of this bit of mangled territory that the die-hards among the brass-hats snorted indignantly. This Chemical General, Canby, had the effrontery to propose that they deliberately evacuate the lines from Amiens to Rouen and let the enemy through! Worse, he was urging them to stock the advance base at Gournay, behind the salient of that name, with thousands of tons of flour newly received at great risk and expense from America, and then abandon it to the enemy. Such tactics were shockingly novel! Outrageous recklessness!

In time, Canby made his point. He argued that they were certain to lose the sector in any case, and pointed out that by orderly withdrawal they would save the troops to strengthen their lines elsewhere. And he finally convinced the most stupid of them that the gift of the flour was like that of the Trojan horse. It was charged with the hormones of destructive madness!

Flour, of all things, was what the enemy needed most. Although they had swept the Continent from one shore almost to the other, their lack of sea power had meant they still suffered an external blockade. During all the war, there had been an acute shortage of foodstuffs, and the civilian population had long since become inured to the use of

shoddy substitutes. Such stocks of genuine food as could be obtained—usually by capture—were immediately distributed to the army.

When the General Staff made its decision, they were gracious enough to call in General Canby and allow him to dictate the movement orders.

His preparations were swift and simple. While the flour Upham had brought from America was being trucked to the depots of Gournay, all the rest of the district of Seine Inferieure was cleared of every living thing—animals as well as the citizens and troops. Prepared flank lines were drawn on the off banks of the Seine and the Somme. When all the region between the front line trenches and the Channel had been evacuated, the thin ranks holding the line were withdrawn during one dark, rainy night.

The enemy continued to bomb and shell the area, but within a few hours a trench raiding party found an abandoned trench. In another day the vanguard of the army was moving in, warily feeling its way ahead with the probing arm of artillery fire. But planes and scouts soon confirmed the fact of general retreat; the district was deserted, empty of defenders.

The general commanding the first wave of the invaders found the unguarded depots of Gournay, and settled his headquarters there. There was much material there besides flour, and hundreds of trucks were soon rolling to the rear, dispersing the welcome booty. Field kitchens all over conquered France would shortly serve to the victorious

soldiers food that they had been deprived of for many months.

Fighting went on as usual, for several days. General Canby trotted in and out of General Headquarters, enduring as patiently as he could the biting comments of the Commander-in-Chief. But his aide, Colonel Upham, was content. He knew his hormones and their interval of propagation. Consequently, he walked the streets of Rouen unmindful of the tittering of the French girls or the wisecracks of the fresh young officers who referred to him in the privacy of their messes as "that nutty old billy-goat." His mind was full of anticipation of the humbling of his erstwhile co-worker, Heine Woerlein. In just a few more hours he could taste his triumph, watch his contemptible "deformed hormones" tumble the reputation of his friendly rival into the dust.

On the third day, the relinquished sector was filled with the foe. He had occupied it to the utmost edge.

Then something extraordinary began to happen. Troop movements began on a huge scale. Those within the sector, the ones who had been attacking the north and south lines hemming it in, ceased their operations and unexpectedly marched away toward the coast. Elsewhere in France, armies began to converge on that region that had so accommodatingly been vacated by the Democratic armies. In response to the only inquiry that Upham made, Canby found out for him, through the Intelligence Service, that the enemy High Command was still located at Paris—including, of

course, the general commanding the chemical warfare elements, General H. Woerlein.

"Too bad we can't see it all," remarked General Canby to Colonel Upham, the next day. They were lying on the belfry platform of an ancient Rouen church steeple, their binoculars resting on the sill of a slender Gothic window that opened out to the wastes to the north.

Firing had ceased. It was unnecessary now to shoot away ammunition. The enemy was paying no attention to what lay on his flanks, only to what was ahead. And ahead was but the ruined and deserted villages of what had once been the pleasant country of Seine Inferieure. Beyond them lay only the English Channel.

Canby and Upham looked again across the fields to the north. As far as the eye could see, there were columns of gray-clad soldiers—many columns, marching abreast. Among them threaded yet other columns, motor-drawn, lines of trucks, tractors, field-guns, tanks. All—regiments, divisions, whole armies—were marching steadily to the west. Whatever lay in their path, whether shrub, stump, or the crumbling walls of a wrecked town, was seized upon, torn apart and scattered to the winds in blind ferocity. But always onward, seaward, flowed those endless lines of gray men.

All day that procession passed. It was a stupendous, awe-inspiring review of the greatest army the world had ever seen assembled. No matter how many thousands had gone on

before, there were yet more thousands to follow at their heels.

In the late afternoon, an aerial parade appeared to complete the spectacle. Overhead, the sky became black with planes, planes that veered neither to the right nor the left. They, too, were going west. And behind, from out the hazy distance of the eastern sky, still other squadrons were coming.

Night brought no cessation of the sounds of the hurrying hordes. The measured tramp of countless feet, the laboring motors of the trucks and tractors, and the unremitting drone of planes above filled the dark air with the echoes of urgent travel. The bewildered citizenry of Rouen was glad to hear them pass, but wondered dumbly where they were going. To the west lay England, to be sure, but where existed the fleets needful to transport such hosts?

In General Headquarters, General Canby pawed through the communications files. Telegrams from the eastern trenches reported the enemy had withdrawn from the attack, and was moving off to the west. Dispatches from Falmouth, England, stated that a multitude of aircraft were passing that point, flying high, headed straight into the west. Toward dawn, radio reports were received from the Admiralty. These contained the startling information that the head of the columns of planes had passed the south of Ireland, far at sea. Several destroyers there had observed many of them falling, apparently out of fuel, while many others, still in formation, had plunged into the sea in full-power dives. There had been a search for survivors, but none had been found.

When morning came, Canby and Upham went again to their observation post in the church tower. There were still the relentlessly moving columns to be seen, and they could not but feel appalled at the very magnitude of the forces they had set in operation. As they watched, breathless almost with awe, they noticed a new feature in this day's stampede. Yesterday, the men driving seaward had stopped occasionally, as if for meals or routine rest, but today they did not stop. Seemingly tireless, or as if driven by some urge that brooked no delay and revoked the natural laws of fatigue, they even accelerated their pace.

The last of the airplanes had gone on out over the Atlantic. The sky was clear. General Canby and his aide left their perch, went to the ground, where the general ordered a plane. At the air-base, the grotesque figure of the discoverer of the mystery hormones that had caused this astounding migration of their opponents followed his chubby chief into the waiting plane. They got off the ground and steered a course across the sky above the marching legions, heading toward Dieppe, on the Channel. The hurrying troops and motorcades below were too intent on their strange fixed purpose even to glance upward.

If the sight of the marching armies past Rouen had been uncanny, what was to be seen at the shore line staggered belief. The beach, wherever access could be had to it from the land, was black with men, crossing, striding into the surf. In one place where a road led straight down to the water, a long column of tanks had emerged onto the sand, wallowed

across it, and plunged into the waves. The first of them had flailed as soon as their carburetors flooded, but the succeeding ones crawled clumsily up over them, toppling into the water beyond.

Canby and Upham circled above, watching in amazement. Soon, something very much like a breakwater had been built by the steady accretion of new tanks, flung together in a nondescript pile, some upside down, others at weird angles. Some infantry, following, advanced unhesitatingly into the water until stopped by the irregular wall of steel. They beat viciously at it with rifle butts, or tossed hand grenades. Finding they could neither demolish it nor move it, they wriggled between the crevices or climbed over. By whatever means they could, they forced their way to the other side. Then they struck out into the dirty waters of the Channel, swimming, a few of them, for a few yards, but the weight of their equipment dragged most of them down.

Similar scenes were everywhere along the coast. The seemingly inexhaustible man-power of the enemy was pouring steadily over the sand dunes, charging across the beaches, flinging itself into the ocean.

General Canby viewed the strewn ocean in solemn silence. As night approached and there was yet no end to the advancing regiments bent on watery self-destruction, he turned the plane and headed back toward Rouen. Colonel Upham had seen enough. His theory had borne fruit, abundantly. The war was won, and far more important to him, his thesis was upheld. Somewhere among those ocean-craving throngs was his friend and classmate, Heine

Woerlein. His victory would be empty unless his life-long rival should understand and acknowledge it. Until now, their years of competition had been indecisive. He asked Canby what news there was of the location of the opposing High Command.

It was the next forenoon that they found them. His Excellency, the Supreme Commander of the Central armies, was marching seaward, surrounded by his staff. Canby's plane alighted gently in a field a little to the right and ahead of them. He and Upham awaited the oncoming general and his circle of high officers, goose-stepping their way forward, glazed eyes fixed on the western horizon. Like men in a trance, they went forward. Among them, Upham finally recognized his old roommate, Heine, belted, be-medalled, and well-nigh concealed by his steel helmet.

Upham darted amongst the unseeing staff, and grasped Woerlein by the shoulder and shook him violently, but to no avail. Then he slipped from his pocket a syringe he had prepared and deftly shot the injection into the arm of the somnambulistic Heine. After eight more paces, Heine shook himself and the light of recognition came into his eyes.

"My hormones have got you, Heine," said Silvy urgently. "Snap out of it! You are on your way to drown yourself."

The dazed Woerlein was led to the plane of his adversary, while Upham administered shots of his antidote to the Supreme Commander and his most important aides. A half

hour later, they were cruising above the water's edge, showing the astonished captive generals what was happening to their armies. Convinced, the vanquished commander-in-chief signed the armistice put before him, and Canby sent out messages ordering the remainder of the flour to be intercepted and destroyed. Later, the victorious troops of the Allied Democracies, armed with tanks of Upham's antidote, were pursuing the ocean-bound cohorts of the Centralists, salvaging as many of them as they could overtake.

General Woerlein, as a distinguished prisoner of war, was paroled to the custody of Colonel Upham. In his quarters at Rouen, Upham told him what had happened to him.

"I sent you fair warning, Heine," chuckled Upham, his unruly beard wagging up and down as he spoke. "H over H, the hormones conquer Heine! It should teach you to be more respectful to the possibilities of some organisms.

"If you remember my university thesis, you will recall that I was even then speculating as to the causes of the extraordinary migrations of the lemmings of Norway, those little rodents that periodically go in droves to the sea, devouring or destroying everything in their path. As you know—or should know—when they reach the sea they go right on in, by the thousands, all of them, and start swimming straight away from the shore. Of course, they always drown.

"In the course of time, I eliminated most of the possible causes of this phenomenon and came to suspect that there was something in their diet, some accidental variation of it,

that produced the disturbance. It was evidently something that occurred periodically, although irregularly.

"Eventually, I narrowed the field of inquiry and proved to my satisfaction that the magnetic fluctuations set up by auroras was what caused these mutations. I took moss, and bark, and the other rubbish they ordinarily feed on, and manipulated them in various magnetic fields. Finally I got a batch that worked. The hormones of madness—those hydrophiliac organisms—appeared in living specimens. It was simple enough after that to induce the same variations in other foods, such as wheat.

"The wheat variants were even more powerful than those in the moss, and according to my computations, strong enough to actuate men. You saw how it did it. *I think that proves something or other.*"

"Yes," admitted Heine Woerlein, sadly, "I think it does!"

[The end of "*Seaward!*" by Malcolm Jameson]