Folio

April *1952*

Folio

UNIVERSITY OF WESTERN ONTARIO

VOLUME 6 NUMBER 1

Published by authorization of the University Students' Council of the University of Western Ontario. Folio is printed by The Middlesex Printing Company, 425 Adelaide Street, London, Ontario.

"What does the mind enjoy in books?
Either the style or nothing. But,
some one says, What about the thought? The thought,
that is the style, too."

—Charles Maurras

Prose

DOUG SPETTIGUE
MACK LAING
NAN CLEGG
D. C. SLOTE
ROBERT HAYNES
HOWARD L. FERGUSON
LLOYD V. WALLACE
RICHARD W. FORD
LYLE PRETTY
P. MANN
GLORIA BELLINGER

In the Yellow Circle

DOUG SPETTIGUE

IT made no difference, the who and the why. They were nobody to the guards, the guards whose privilege in life was to live without thought. They shuffled in and were suddenly silent, concentrating their eyes on the floorbricks until the lights went out with the closing of the door. Action was all done for them. They felt their weariness, and because there was nothing left, they sank down onto the bricks.

It would have made a lovely little drama, a one-acter, something for Saroyan to work on, tinker with, turn out as an hour's pinch of beauty for someone's Little Theatre. Saroyan, or maybe Tennessee Williams. It would be the circle theatre sort of thing, the audience all around and the auditorium in absolute darkness. Their voices could come out of the centre bodiless, mysterious, the suspended moment idea, and they could talk a breath-taking moment about—

And there the whole crazy conception, the too-neat little one-acter, broke down for want of players. They were there all right, five men on a brick floor, but no one said a word. There was, too, the other difference that this show had no hour to run. Two minutes for the old man, likely, three or four, maybe five, for the younger fellows and the teacher himself, the "Professor," they called him.

He levelled himself out on the floor, moving slowly and cautiously in the dark, breathing shallowly and seldom. On his back, staring sightlessly at the roof where the walls might have arched to union some feet or infinity above him, the incongruity of his precautions reached thro' to him and he twisted a grin no one could have seen. It was actually a bit exhilarating, once you got to the indifferent stage, and the Prof—he was a mere teacher in a high-school but they called him the "Professor"—had reached that stage. You had only to get outside of it enough to be able to shrug your shoulders, enough to feel that you could get it all straight in your mind so that you could go back and tell them all about it, talking with your long hands and doing quick excited sketches on a pad. It was a shame, though, that there was no one to see or to know how it ended. Given a little light, say the tiny one that had glowed faintly somewhere over their heads when the door had opened, you could have imagined an audience, looking through glass walls, perhaps. Of course they would be aesthetes, his friends, such as might appreciate the beauty of the thing. That was assuming there were friends left; but to question any such assumption here would be unrealistic. There was you, just for a moment, a minute or two, and nothing was more real or less than you cared to pretend. That was the way the Prof liked it.

He shifted weight from his shoulder blades and his foot pushed a yielding lump. It gasped a sound that was almost a scream and jerked suddenly aside, brushing cloth on the bricks. It might be one of the boys,

the dumpy soldier one or the crew-cut blond, or the old man. The old man had been closest when they had come in and stood. It was probably the old man.

He was the tensest, too. There had been something uncomfortable about the way the old man had gone off outside. You don't think of old men getting hysterical, though there was probably no reason why they shouldn't. Each according to his own make-up. But it had made them all feel wretched, after they had been so good about it, and the kids had tried to joke a little.

One of the young fellows had worn army clothing, untidy with hard and careless treatment but snug enough to have been his own. He might have looked cherubic if he had been a bit shorter. He was chubby enough, very round-faced, but his manner was too close to the military. He would have had a couple of stripes and have commanded a light machine gun. He would be funny off parade and a lead-slinger in the mornings, but he would shoot well at the right times.

The other, the blond one, was the trades-school type, the kind the Prof had never known, could never know. He had often told himself that he was snobbish that way, that in his own world of hard knocks and easy fun the lad was as human as himself. But in such cases the mind loses its grip on the thing and orders empty words. Had the blond boy been in a play or a reading for parts, the Prof would have known what to assign him. He might read well enough as readers go, every part with the next. The Prof was sorry about that, but he had no place for him.

It was not bad, not having any light. It made you willing to lie still and let the darkness press on you and handle you without a stirring of your own, until it hugged you, a smile on your face, into sleep. The Prof didn't want that. He wanted to be able to see it, to feel the drama of it, to be able to say, as the curtain came down, "An excellent play." And then would there be afterwards the actors congratulating, handholding, the stage-hands shouting, and the make-up girls and the prop-men and the techs all there and beaming.

But that wasn't the way it was going to be at all. The Prof was desperately afraid, now, that the darkness would get the others, that the old man would start to scream again, and the rest beat him in their frenzy. None of them had rushed against the door, or cried, or beat his head on the bricks. That was unfortunate; but they had been hardly a minute yet, and would not be asleep.

The old man was the one to worry about. The tubby soldier fellow would lie still there quietly, probably look through the dark to frame a lighted picture of the curved walls in his mind. He would estimate their length and breadth and height, and calculate the number of bricks. He would allow for their arched shape, too, and his figure would be exact because that was the sort he was . He might think of his family if he had one, or if he still had one, but unemotionally, glad for their being alive, sorry for their fretting. Then in his thinking he would remember something he should have told them. Blinking in the dark, he could say out loud, projecting his voice, "About that leak in the roof, mom—I wouldn't leave it if I was you. This is the end of the good weather." You

would have to arrange some way to have the family on stage, the mother and sister would do, standing off-side from the circle of light and saying, "Yes, Jerry, we'll remember. Don't worry about us, Jerry."

The Prof's head throbbed suddenly and his stomach muscles knotted in a thrill of horror. He let his breath out cautiously and got a grip on himself. It was funny how your real fear could break in on you like that without warning when you were thinking calmly and intensely about something remote. But it aroused an awareness of urgency. Another minute must have gone, and he had not really begun his drama. Talk of precious time! He used to say to his classes, half-joking at them in the corridors, "Tempus fugit," and they would laugh at the false junction of old Latin with the brevity of present time.

"Christ, why don't they hurry up?" The Prof stiffened in sudden fright, then turned to pin-point the sound. The blond fellow, he decided, and he heard Jerry ask, surprised, "Who?"

So they were starting to talk. And who were "they" the blond had shouted about? There was a half-submerged excitement in Jerry's question, too. Did the blond know something? Were they maybe not finished? Was somebody going to—Nonsense! The Prof forced himself away from the talk and tried to get back to his thinking. Jerry asked again, "Who?" but without any inflection this time. His hidden self-discipline controlled him or else he had guessed the answer himself. The Prof could have told him, "He means the operators," but he did not want to hear his voice then, in that place. He wished they wouldn't talk any more. The seconds crowded through whenever an opening of conversation came, and he wanted to return to his thinking. Jerry got no answer and did not ask again, "Who?"

They had crossed that one hurdle and the old man had not stirred. His excitement outside must have tired him, or drained him of feeling. It was hard to know what an old man would feel, hard to fit him into the play. Of course there were conventional old men who felt what young men thought old men ought to feel. The Prof was still young himself and had red hair, but he thought he knew that old men didn't like to be sentimentalized any more than a thirtyish man likes to be smiled on by teen-aged girls. But that was no help to him in deciding what to do about the old man.

The truth of the matter was, the old man had no business being there. But you couldn't have only the four on stage any more than you could have four zinnias in a bowl, or four mannequins in a window. The play was falling apart now, and the Prof felt just a little bitter about it. There was no point in blaming the old man any more than all the men, young and old and middle-aged and fat, who horned in all the time and tried to find a place. They had to do it. It was quite true, that bit about all the world being a stage, but it wasn't right about the players. Most people wanted to be stage-hands, and they came on and shoved props all over the place in a madness of enthusiasm, never thinking how foolish they would look, seen from out front.

If people could only be made to recognize the necessity of doing it all properly, to see the beauty of being here or there or there, instead of presenting always their heads and their horns against direction. If you could

only run the whole thing through once, in rehearsal, then there would be no danger and confusion and formless ad libbing.

It was good the old man had stayed quiet. If he could not be used actively, it was better that he remain still on stage, like a statue of the Thinker. Silent parts were difficult but not so difficult as trying to direct the volubility of a cracked old man. Better to leave him as the Thinker.

"He's dead anyways." Again the quick fear spasm and the self-conscious relaxing of the breath and the stomach muscles. This was the fifth man speaking a sudden impromptu line, breaking in on what was better left alone. The Prof didn't like it.

So the old man was dead. That left him again with only four to work with, counting himself. The worst of it was, he hadn't even had a chance to arrange the old man's dying. He was getting behind in his work and the time was running short.

He would have to leave the body there in half-view at the outer rim of the amber circle of light. That would give the old man an artistic place in the setting and spread a religious aura around the death that fitted in well with old men. People still expected old men to be religious and it was just as well that one of the cast should be. The body was a fine innovation.

"Only he wasn't." The fifth man spoke with the contemptuous inflection of assurance, and the Prof knew at once that it was true. The old man could not have been religious; it wasn't in him. Now again he was left with no one to represent religion, and having experimented with it, he did not see how he could do well without it. Then the Prof realized that he was very tired.

It must be nearly three minutes and he had yet to deal with his own part. And the fifth part. He would leave his own last, of course, the traditional position and the dramatic one. But then all their parts were last this time.

The fifth part. The first step was to appraise your player, his self and his outside. But here was the troubling thing; concentrating on the others—had they been nearer or more compelling?—he had never been able to look squarely at the fifth man. To be honest, he hadn't tried, hadn't even been aware of him. Yes, he had, he must have, because he had counted five all along. If there were a bit of light, just enough to show the outline, the age, the more obvious materials he would have to work with, then there would be no problem. Curse a dark stage! He could say only that he had a fifth man.

And that he was tired. He was getting nowhere at this rate and time was short. You could use the fifth man as a sort of chorus to tell the audience what it ought to know. But that was a waste of character; you couldn't tell anything what it ought to know. Some people weren't so resigned about it as that, but that was the Prof's view. Well, let him be a chorus; he was opinionated enough. He had said the old man was dead and said the old man wasn't religious. That was funny, too, how he had known that. That was probably where he fitted in then, as a friend of the old

man. A son perhaps? His voice wasn't old, and it wasn't young. But his part, his part.

As a chorus he could come in clad in white, stand almost off-stage and comment on the players. A spot-light would be the thing to have, and you could switch it off and on with each of his speeches so that you would not feel, while the others talked,that he was really there at all.

But you had to have the right sort of person for a chorus, with a firm but sympathetic voice, a clear eye and classic brow and all the rest of it. This man's voice was heavy and his words dropped in flat prose. The Prof was tired and he would have liked to be the chorus himself. You had to have it in you, this lovely apartness, this way of knowing that one should be there and there, saying such and such, and building up the pattern from the floor. You had to understand that such a man would feel in this way and such in another, and that all that really mattered for them was to be in the right part, not to spoil the pattern. The Prof knew what was right and what was not.

Why was it that those who did know were cut off so early, and when there were so few? The ideal would be to grow old on the stage, shifting your props and your players each year as your vision became altered with time and your touch surer, until you could embrace a theatre in a glance, and the world's pit would shout for the white hairs of your beard encircling the perfect condensation of the last scene. But you had your little chance and your production was still imperfect when you were called back-stage and threw back the edge of the wing curtain as a last gesture to your successor. And he had no more time than you.

The fifth man, then, would be close to the old man. He would come in slowly, having known beforehand of the death, his head bowed—no, not with his head bowed, not a man with his voice—he would come in slowly, having known beforehand of the death, hands in his pockets, lips pursed, not sure but not showing what he doubted. He would look at the old man and say—something appropriate. Actually you couldn't tell what he would say without first having seen him, but it was too late for regrets. Words would have to be written in and he would have to learn them, that was all. What mattered was that he and all of them, all who ever played and might ever play, should fit in with the shifting of the scenes and the subtle raising and dimming of the lights, saying their parts and leaving a taste of their moment of importance for the mouths of those who followed.

But here there were no lights, there were only the oven of bricks, the tomb-full of darkness and the insidious flavour to the dark that made tasteless the palate and crowded the nose and heavy the eyelids.

From an indeterminate distance the voice of the blond youth came in indistinct mutterings, closed with sharply drawn breath and a long sigh. "Who?" questioned the soldier, but it was hardly a question, only the slow repetition of his thought of a minute before. There came and went another sigh and the blond voice asked, a little stronger, "Will anybody find out about us, Jerry?" Jerry dragged an answer up from the bricks, said, "Don't know," and then said, "Sure, I suppose so." They talked a little.

"I guess everybody matters to somebody."

"Guess so. With me, anyway."

"Me too. Sort of hate to go like this."

"Better not talk."

They were quiet then and for a moment you could hear their breathing as it settled. Then somebody chuckled. "It couldn't matter less, you know," said the fifth man. "What would you do with the ten seconds you saved by not talking?"

It was a brutal question and the Prof was indignant. He had welcomed the dialogue as fitting and desirable, and equally its reasoned conclusion as in harmony with the action of the play. This final note was out of tune, jarring, almost deliberately antagonistic to the beauty of the moment. There was no place for the fifth part unless it could conform. And every ten seconds mattered.

"Not thinking a way out, are you, Prof?" The fifth man was going to talk.

"No."

"Then why quibble for ten seconds?" Again the fifth man had inferred his thoughts.

This time the Prof did not answer. He had to hurry.

"When the door opens, Prof, do you think they'll care what I said or how far apart we were lying?"

The Prof, in spite of himself, had a sudden vision of the opening door, the glowing yellow light and the still five. He was propped against the wall as he saw it, his head on his chest, his limbs slumped in a final gesture of resignation, and his lips forming a single last word of heroic composure. It came as a naked truth that he would be stretched instead on the bricks, long past saying a word. Somebody ought to witness it.

The Prof was very tired. And it didn't matter really. He would have liked to have said something stinging to the cynic, but that could wait now. Everything could wait, or could end in the instant. When you thought as the fifth man did, it really couldn't matter less. It was not worth propping his eyelids any longer. Let them close. The old man had done wisely to have died early and without a struggle. After all, where did your thinking get you?

Out of the dark the soldier, Jerry, whispered, "Who?" and out of the dark the fifth man muttered, "Nobody." This time the Prof felt no bitterness. He recognized the honesty in the fifth man's part. Nobody would care. Few would even know. There would be others. And where did your thinking get you? A tale told by an idiot, that was all.

The fifth man mumbled something blurred and halting. "Blond," and "gone," found their way through to the Prof and he took a moment to put them together. They didn't really mean so very much. Taken out of the play they were quite dry, empty, prosaic. If that was how it was to be, that was how it was to be. You could do nothing about it. Couldn't change it. Or alter it. That was the way the fifth man would think of it, the way he was thinking of it right now, if he were thinking at all. And the fifth man had been right about such surprising things. The old man. And the Prof's own feelings and thoughts. The fifth man had looked square on and had seen.

So had Jerry. It was likely the best. And the blond boy? And the old man? It didn't matter now. The Prof was very, very tired. The

blond boy had been hopeful. The darkness was heavy and warm. The blond boy had been able to regret. The fifth man had no regrets. The bricks had lost their hardness. Did the Prof regret?

No time to think now. Did the Prof regret? Did he? Yes, the Prof cared. There, that made him unlike the fifth man. Why regret? Why anything? The blond boy hated leaving people who cared. Who cared? People you thought cared. That was it. Thinking made it so, made caring real, made everything real that you cared about. The Prof was so very tired. He let his limbs relax and his head lay sideways on the floor.

It had taken such a little time. They had come in, had seen the shadows of bricks and mortar ridges on the wall, the yellow circle of half light, had heard the closing of the door. One by one they had sunk down in their weariness. Now there was the thinning whisper of soft breathing. After a moment it, too, ceased.

The Clockwatchers

MACK LAING

THE brazen stench of leather filled the factory. Sickening fumes from the ether vats combined with the monotonous clacking of the last-pulling machines to give an illusion of unceasing, confused industry. Narrow aisles between the machines were clogged with portable racks of shoes in various stages of manufacture. The heat was oppressive.

Near one end of the huge production room, a woman stood at a long bench, sorting and packing shoes with deft, efficient movements. She was short and hippy, dressed in dirty plaid slacks, a lumpy sweater, and uncomfortable high heels. Her skin was pale; her hair an uncertain blond. She glanced at the big electric clock which dominated the far wall. She swore.

"4:25. Over an hour to quitting time," thought Babe. She tried to think of quitting time, far-away, long-awaited quitting time. She thought of her noisy, shoving girl friends around the time clock, then crowding into her old car for a reckless trip home. Babe glanced at the clock, grimaced, cursed automatically, and struggled to resume her train of thought.

She thought of the softball game tonight with the factory across town. There would be excitement, yelling and cursing, a wild ride through town after the game, and men. She thought how "cute" she would look in her red and white uniform. The men would shout encouragement saying, "Let's go, Baby," or "C'mon Bebbuh," or even "Sock it, Barbara." Although Bob Chalmers, the factory recreation manager was the only one who ever called her by her real name. Bob was so cute.

"All ready for the big game tonight?" asked the girl working across the table from Babe. "Ready for the big game?" she repeated.

"Whuh? Yeah, oh yeah, I'm ready, all right, Peg."

Peg was a tall, thin girl. Her face was a smear of red on a very white, freckled background. Her eyes were shadowed and her hair was bunched under a kerchief with only a few rusty strands showing. She might just as easily have been a side-show dancer or a Parisian street-walker. She had been married and was divorced. Her age was unguessable.

"Pick me up right after supper, eh Baby? Mary will be at my place. I hope Ray's at the game. He's so cute."

"Bob will be there, won't he? Bob Chalmers, I mean."

"Oh yeah, he'll be there. I like him, better than Ray, even. He always calls me Margaret. He's so cute."

Babe was already thinking how she would maybe give Bob a cute, wicked little wink as he stood with his wife, giving out equipment before

the game. And as usual he would pretend not to notice. Bob was so cute.

She looked hopefuly toward the clock. 4:35. She swore softly, savagely, never breaking the rhythm of her work.

* * * *

"Shoes, heels, hammer and nails," thought Sam, "that's me." He picked a shoe from the rack, a heel from a tray on his right, slammed both in the heeler machine, and tripped the hammer lever. "The same thing in the same place at the same time for seven bleeding, bloody years. And for what? Enough to keep alive on, and seventy-five lousy bucks for the loss of an index finger two years ago. I should've chopped off my arm. Then maybe I could pay the grocer, butcher, coal and water bills once in a while. And if I sliced off my other arm, maybe start to pay off the back rent. Then if I cut off my head—huh." His laugh was little short of a grunt, curt and unhumorous.

Sam twisted around toward the wall. 5:01, a half-hour more. "The last hour's always the same," thought Sam, "a long slow, torturing, thirsting eternity. What I need is a drink. Two drinks. Yeah, two drinks in a dark, cool bar, and a little baseball talk—a chance to forget." He wanted to forget this hot, thirsty monotony. He wanted to forget before he went to a place called home to his complaining wife and kids—to forget the noisy, over-cooked supper, the hot, clammy night in the flat, and then the morning with a day's work piled discouragingly before him.

He remembered now the long, slow course of the day—rush to be at work at 7:30, the slow even run of time until ten o'clock break, long hours till lunch, then the slow, hot, tired afternoon until the final burning, thirst-filled hour. Every ruddy day. "Where is the sense of life?" thought Sam. It was an interesting question.

* * * *

Bill looked lovingly at the copper solution simmering quietly in the curved retort flask. The solution changed slowly from a pale green to a deep, clear emerald. "Just like a sunset," thought Bill, and speculated briefly on the advantages a green sunset would have over the conventional one. He laughed aloud at himself. God, he was happy today, and why not? He had a good job and a good wife. Also, he remembered, the wife had a supper on the table in their tiny apartment.

The whistle of the shoe factory across the street shrilled. Bill glanced at his watch. 5:30. Late again. God, the time flew. He completed a note in his observations and hurried downstairs.

As Bill rounded the corner of the lower landing, he nearly bowled the night janitor over. "Sorry, Scotty," he said, "cleaning up early, eh?"

"Oh, yes, Mister Mills, I start quick. Oh, sir, I been want to see you. My daughter, Saturday, she is getting married. I been here six months, can I get the day off." Scotty was Polish.

"God, I dunno, Scotty. I can't give you a day off. I'm just a little fish in a big pond here."

"Little fish—?"

"Yeah, I don't have so much pull around here yet. But I'll tell you what. You don't talk English so good, and if you want, I'll ask the head janitor, old man Dawson, for you. I know him because he lives down my way."

"Okay. Thank you, thank you, Mister Mills."

"Okay, Scotty, 'night."

"Funny old guy," thought Bill. Living with his daughter like that; his whole family lost in the war. His new son-in-law will be a big help to him.

Bill remembered the long lines of Polish refugees strung out aimlessly along the muddy European roads. There were weary women, kids all sizes, all over, and old men like Scotty. People without a country. See more life in two years than most people would see in two lifetimes.

He recalled his own feelings; the cold and the heat, the noise and the quiet, our men and their men. Then the longings; to see your wife, to hear your dog bark, to wear a hat instead of a helmet. He remembered other little things; the way the weak sun made your bayonet shine; and how the blood mixed with the muddy water. The sun was warm as he stepped outside.

The rest of the research staff of the plant had left several hours before, and Bill was alone as he rode his ancient bicycle past the dingy windows of the Manetta shoe company.

* * * *

The intersection ahead was crowded with factory cars on either side of Bruce Street, loosely leashed, waiting for the green signal. No traffic was to be seen on Bruce except a lone cyclist and a hurrying pedestrian. The yellow light winked. Cyclist and walker hesitated, then both started across the street. An impatient driver, released by the green eye, swerved sharply to miss the first late-crosser.

The car met the bicycle squarely, mashing the cyclist's hip and leg and throwing his body headlong to the pavement with crushing force. Minutes later, crowds pushed to see the crumpled body while police asked routine questions of the bystanders.

"Yeah, a couple of light-beaters," Babe was saying. "The first one was lucky. I turned out to miss one and hit the other. Too bad, he was cute, too. Not my fault, though. I had the green and the right of way. Just a damn light-beater. The first one was lucky."

"Lucky," said Sam, "saved by fate. She turned out to miss me. Why didn't she turn the other way?" He felt like the kid at the surprise party who breathlessly opens his present only to be disappointed. "It would have been so easy," thought Sam.

"So easy. One big boom out of nowhere, then no more worries, bills, or shoes. No watching the clock slowly creep around while the thirst burns steadily from the depths of your throat like ivy growing toward the light. Lucky old Sammy." He was surprised how disappointed he was. He crossed the street to a corner bar.

A Size Too Large

NAN CLEGG

SOMETIMES I wonder how we would have met if I hadn't been serving tomato soup that day. Usually he passed by the soup, but this particular day he brought up his bowl and I ladled out a serving.

"Hi, Fru," Joyce nudged me as she greeted him. "Fru, this is Ann Dorland," she continued.

I dug my nails into the hard-topped counter and looked at him and smiled. I was glad my girlfriend had relented and introduced us. She suspected how I felt and hadn't been keen on my suggestion, and I was thinking that Fru was strong; the hand that held the soup bowl was large, lengthening above the wrist into a leathery arm.

"Hello, Ann," he replied, and I liked the little creases around his eyes as he smiled.

"Hello," I said, and then he walked on because I had a line-up. Soup, tomato soup, bowl after bowl of it. White bowls with two blue rings. Finally, when the students were served, Joyce and I sat down to have ours.

"Thanks," I murmured.

"You're crazy."

"No," I disagreed earnestly, "Thanks."

"What do you see in him?"

I felt squashy. I had to be careful or I'd jumble through things that still didn't fit me; things that only time would have me grow into. I could almost hear my Dad cautioning me: "Don't be so anxious to out-grow yourself."

"Oh," I answered, interested in the cracker I was buttering, "I don't know."

"I think you know very well. I wish I hadn't introduced you. I thought you were falling for him and Ann it's crazy."

I didn't answer. It was good tomato soup.

"Listen, Ann, you're crazy," she persisted.

"I can't help it."

"Ann, listen. Maybe a hundred or two hundred or a million years from now it might be okay, but this is 1950."

I got up from the table and refilled my soup bowl.

"Aren't you having any meat?" she asked impatiently.

"Not today. Must remember to tell the chef this is good."

Joyce sighed.

I never did tell the cook and I never did listen to Joyce. I didn't visit

the people on my mother's list and I didn't write enough post-cards. It was just because this was a summer school in the Rockies; I was eighteen and a University student working in the dining-room, and Fru was a Drama student who happened to like tomato soup.

The next day he spoke to me as I was entering the Administration Building to ask for mail.

"I wonder if it's sorted," he remarked, as he pushed open the door.

I glanced at my watch and smiled at him.

"Should be," I answered.

At the mail rack where the students shuffled through the alphabet for their surnames, he paused.

"Dorland," isn't it?

I nodded. He walked down to the far end of the rack and I stood leaning against one of the desks. I watched him flip through the letters, keep one, and then he reached for another pile—his own surname.

"One for you," he said, coming back, and again I noticed the brown hand that seemed especially large, holding one of my mother's hot-pressed pink envelopes. There was no mail for him.

We sat down on the lawn in front of the Building and I read Mother's letter. When I was finished he asked, "Are you going back to the Chalets?"

I nodded and he added, "Perhaps we could walk back together?" I was glad he said walk. There was a bus ready to leave and no one ever walked if they could help it. "I'd like to," I replied.

I knew students were watching us as we left, just because it was natural for students to stand around and talk and watch. I thought I'd seen Joyce enter the Administration Building but I wasn't sure. I hoped she would see me with him, because I was proud. Proud like I'd never been before and I felt glad about everything.

It was a warm day hanging lazily from a blue sky and we walked in silence. Squirrels acted up on the path ahead of us and once we tried to creep up on one, but he scurried into the bushes and we laughed. After we passed the cemetery we started up Stony Squaw mountain toward the Chalets and it was steep. He put his arm around my waist and after a few steps I became conscious only of his large hand at my waist and stopped, my head hanging. Somehow I was shy, yet I leaned against him. I could feel his breathing and drew myself closer, turning my face up to his.

"This is what you want," he breathed—it was half a question, half a statement.

"Yes."

"Are you sure?"

I felt his hands move; one on my back and the other at my waist and I didn't answer. I was thinking of Joyce and wondering if Time was moving forward hundreds and hundreds of years. At first his mouth was hard against mine and then he was gentle, as I had known he would be. We stoood, my body moulded lightly against his, and he kissed me until I couldn't get my breath. I kept thinking crazy things. I wondered if we were on a mountain-top, where I had seen rocks smooth and bare-brown from a humming wind and earth crusty from Time, and where the air was

warm and I could almost touch the sky. I wanted to stand on tip-toe and try, but I was afraid. Immediately, I felt him stiffen and he didn't kiss me any more. He stroked my hair and I felt like a small child, very safe, very safe, like a vase slipped from a little grasp and saved before it was broken. I don't know how long we stayed there. After a while we leaned against the bank below, unseen, and we talked a little. All the time his arm was around my waist and my head on his shoulder and when we were silent I turned my face up to his and he kissed me.

Joyce was in a flap when I got back. She had served all the supper salads herself and besides that, they had run out of peas for the main course, something that had never happened before, and she seemed to blame my absence for the whole affair.

"Where were you?" she inquired, testily.

I didn't answer.

"I know where you were. Saw you leave the Administration Building with him."

Annoyed, I looked at her. "There's nothing wrong with it," I retorted.

"Listen, Ann, snap out of it. I wasn't the only one who saw you and those same kids wondered where you were at supper. I saw you at about four-thirty and it's almost seven."

I stretched out on the bed.

"Come to your senses. If I didn't know you and your determination I'd forget it, but Ann, I'm telling you this is beyond you."

"It's my life and his."

"Listen to me you little dope," she said.

"No, I won't," I interrupted. "I've found something beautiful."

"And that is?"

But I turned my face over into the pillow. What had I found? I had let him kiss me and I hadn't minded. We were going to see each other tomorrow night . . . and every night . . .

"All right, don't answer. You'll find out."

I folded the pillow up over my ears, trying to shut out the words. In a few moments she left the room.

It was that way for the rest of the summer. I continued to see him and Joyce continued to argue. After a date with him, Joyce would deflate when she saw how happy I was. Others saw it too, and I couldn't help it and didn't care. Joyce said it was impossible, like riding along the brink of an atom, or something, and maybe it was. But our unpleated affection hadn't stiffened from that first day on Stony Squaw and the more I saw of him the prouder I was. He was careful about me and delicate about my feelings. Although he was far better educated than I, he seemed to appreciate the little I had to offer, and treated me, as he did everybody, with dignity. He sensed my moods and always helped me. Whether it was finding a stick to toast my marshmallows at a school hike or trimming an idea that didn't quite fit, Fru always knew what to do.

Joyce kept raving about what my family would say, people I knew, his people, social outcasts, and about all this happening before its Time, and I rummaged for answers. When I was with him everything was all

right, but with Joyce nagging at me I felt I was living in a book without an ending. She didn't think we should attend school recitals and plays the way we did, sometimes arriving late and usually leaving early. "Everybody looks at you," she would say.

I knew Joyce thought she was doing the right thing. We had been through a year of college together, both of us away from home, and we were as close as girl friends ever get. I guess I really let her down. I didn't even listen to her half the time. She kept saying, "Maybe a million years from now, who knows? But not now." She used the words like a rubber stamp, over and over again, and sometimes I hated her for thinking it had to be that way. It didn't seem important that the moon shone for white people on one continent and yellow people on another. It was the same moon and ours the same love we might have had for one of our own race. I wasn't sorry it had happened, there was no need to be. I was glad, and we were going to be married.

I don't remember what I felt when I told Joyce.

"This must be solved logically," she began, and as if it were step one in a geometrical proof. "It's wrong for you and wrong for him. Sure, we all have love in our hearts for Frus all over the world. In Sunday School we used to say, "However different they may be, all boys and girls belong to Thee," and that's right. But not inter-marriage."

How I hated that word, and it was, I think, the word that Joyce played up most of all that night. She knew I had heard lectures on inter-marriage, but a person changes, and one doesn't think that anything ugly exists when you are in love.

We really had a row that night. One moment she was saying she loved me and the next that she hated me for being so obstinate about something so serious. At first nothing she said had any effect on me. Now that Fru and I had made definite plans for our life together her words were lost before they reached me. But she kept on and on: where were we going to live, what about his job, what about my degree, did I know his background, could he support a wife, and had I thought about children. I had answers for everything. His father, a widower, had a fruit ranch in British Columbia, but was anxious to retire. Fru, the only child, was to inherit the orchard and would farm it for awhile because that's what his father had always believed. Fru said his father didn't fully understand what his Master's Degree in education meant, but after spending a few years on the farm, Fru hoped he could teach. I had all this to tell Joyce, all this that meant security, but she didn't give me a chance. I wanted to tell her I didn't care about my degree anymore and that we did want children, but she seemed to have the attitude that nothing I could say would be acceptable. Finally, with her constant needling, a future that was almost a perfect fit was suddenly voluminous and misshapen. I started to cry and told her to mind her own business. I remember she stood up and said, "I've done all I can," and the words dropped individually, like the first raspberries in a berry picker's pail.

But even summer schools end. More abruptly than I had ever imagined and all at once the bulletin boards sported last minute instructions and the girls vibrated with write-to-me chatter. We had decided to leave the day before the official closing and Fru, in his effortless, systematic way, was looking after everything. Joyce and I hadn't spoken much since

the row but I felt I should tell her when we were leaving, and she seemed glad enough that I bothered.

"What time does the train leave?" she asked.

I told her six-thirty and that I was meeting Fru about twenty after. For a moment I thought she looked as if she understood, but when she asked, "How much have you told your folks?" I knew that she would never understand the happiness I had to pursue.

"I haven't mentioned Fru to them yet, I'll wait until we're married."

That night at about ten after six I left the dormitory. I just carried my twin set, Joyce and I hadn't packed much for the summer, and she said she would forward my other things when she heard from me. As I passed the dining-room windows I could hear the supper-stir and the occasional scraping chair and I thought of her behind the counter. I thought of her at our sorority tea dances, on hikes and in the swimming pool. It was crazy to get so sentimental, but I couldn't help wishing she had understood.

I walked along quickly, anxious to get to Fru this final and beautiful time. When I didn't find him in the station I walked out onto the platform, and then, far down amid wagons piled with mail and luggage I saw him standing with his back to me. I stood watching him, knowing he was checking our reservations, and even then I thought how much I loved him for being so careful. As I stood, expecting him to walk toward me any minute, he stepped up into the train. I never took my eyes off the door where he disappeared, and several minutes later when the porters called the all-aboards, I stood staring at the spot where I had seen him last, believing in my heart that he would come, but I didn't see him again. I was crying, unbelieving tears, and still staring at the place where I had seen him last, I tried, foolishly, in my mind, to hold the train back, but it was like Time out of control. I was thinking crazy things again, like tomato soup, dresses that didn't fit, and riding along the brink of an atom. And then, far off, I heard someone say, "I had to tell him something, oh, Ann, believe me, I couldn't let you go through with it, I had to," and I recognized Joyce. She was crying almost hysterically. Her cheeks were blotchy and her eyes squinting, like they were stitched around the edges. At the thought of her interference and what she had dared to tell him, she was suddenly everything that meant ugliness to me. The train's departing screech pierced the air as it rounded the bend out of sight.

"And, maybe hundreds of years from now, somewhere else . . . ."

I wasn't listening to her. I was taking a final look at the place where I had seen him for the last time, and wondering what he had been told that was so wrong.

Walking loosely together, we started toward the station. A muffled train screech wafted back to me, not slicing the air this time, but ragged around the edges, and I was wondering, with each step, what I would do with the rest of my life.

The Twin Cities

D. C. SLOTE

FOR a long time, the mistiness over the land had seemed mysterious and warm; he found himself imagining strange dreams as he looked into the rushing wisps of vapor. From his train window, the whiteness of the fog blended irregularly with the blackness of the night. At times, it seemed like a thousand butterfly wings were stretched against a dark carpet, and then the image would change, and he would see only smoke and darkness.

He moved forward slightly in his seat, and noticed how the mist seemed to exist only within the radius of the light from the windows. He tried to peer beyond the great black wall, but he soon gave up. He was glad to move his position even slightly, and to fancy all sorts of things in the mist as he did so; while he was occupied in this way, he did not have to think about the train and where it was going . . . .

He grew tired of the game with the mist, and settled back in the seat. He noticed a face across an aisle which was watching him with a faintly amused smile. Ordinarily he would suddenly have become conscious of how strangely he had been behaving, but this time he felt hugely tired and didn't care who watched him. Tonight he was free from his own particular tortures and gnawing fears; tonight he was very tired, and almost at peace.

From his sunken position, he looked out the window again. He wished he could touch the darkness and somehow weave a great cloak from its threads. He would like to be able to wrap himself in it, and swirl along, like the mist, disembodied, quiet and very secret. He found himself smiling at his vagueness, turned away from the window, and slowly fell asleep. . . .

When he awoke, it was daylight, and the train was rushing over an unfamiliar landscape. He looked with new interest at the small buildings scattered over the countryside, and the foreign vegetation. It was strange about the trees and the grasses which he saw; he had seen hundreds of them in his lifetime, and they were all the same; yet now, arranged in an unfamiliar pattern, he was overcome with their unfriendliness. He suddenly wished he was off the train, and away from its narrow walls. If he could but walk among the coolness of the grasses by the roadside, and recline under the vast cathedral of the trees, he would be content. But of course the train wouldn't stop, and he must watch these things he loved from the close confines of the train . . .

He settled back in his seat to watch the changes in the clouds over along the horizon. There was a vast feeling of timelessness about the world today. The sun seemed fixed in the heavens, unmoving and steady in its brightness; the trees barely moved in the breeze, and from his moving window, everything seemed frozen in an eternal brightness. The

summer's day, its heat, its wind, and its beauty seemed locked in the square of the window in a series of sharp impressions. How far away the night seemed! He had felt at peace last night, but now he was strangely disturbed. There was a heaviness in his chest, and a kind of sweet sadness that was not lightened by the summer brightness of the day. As the train rushed heedlessly on toward its destination, as if oblivious to the great drama on either side of its outside walls, he felt incredibly lonely and melancholy. The trees and leaves and the silent wings in that air beyond the window were locked forever from him, and he felt himself lost in a twilight world of narrow walls and rushing images which he would never be able to touch . . . .

Was he really leaving home and everything he had known? Looking at the landscape and listening to the silent music within his mind, he could not imagine he had changed so much. And yet, he had left his friends, precious friends whom he had loved, and his home where he had learned to live, and the hills where, as a boy, he had stood for brief moments, letting the wind move his hair, and experienced all the sad, wonderful things of life . . . .

He got up and walked the length of the coach, then came back to his seat. He had not glanced at many of the faces around him; he found most of them unpleasant and he wished they were not travelling with him.

When he sat down again, he was startled to see the change in the landscape. The trees had almost completely gone, the grasses covered greater tracts of land, and the hills seemed to become smaller and smaller. He felt the heaviness in his chest increase; he felt as if a stage curtain were about to go up on his window world, and show him new perspectives and new horizons. He wondered if he would ever again see the landscape of his childhood, and the familiar tree-patterns, and hear the bird songs. Somehow he knew he never would, and the knowledge made him infinitely depressed; he felt that he was hurtling toward a destination from which he could never return, and that he was lost even to himself . . . .

He could barely sit still in his seat. There was a tremendous feeling in his heart of expectancy, of strangeness, and of loneliness. He fought down his tears, tried not to look at the faces of his fellow-travellers, and then looked out the window again. And now he felt a great wave of fear and joy tear at his heart. He seemed to almost strangle with the greatness of his emotion, and his eyes began to fill with tears. He raised one hand to his mouth in a sad, futile little gesture and gazed for a long time at their destination: in the distance, the sun blazed on two magnificent cities, lying side by side on the great, level plain.

The Basic Sciences

ROBERT HAYNES

Introduction

YOU, the reader, may perhaps wonder why "Folio," Western's literary magazine, should carry articles of an essentially non-literary nature; and in fact, even go so far as to print essays whose chief concern is the exposition and propagation of the concepts of that awesome, grinning monster, "Modern Science." The reason is sound, though you may find difficulty in accepting it. In the first place, the editors felt that the scope of this magazine should be extended to include all types of intellectual and cultural articles; and secondly, in the case of this particular selection, to provide Arts students with a short readable account of the present state of the Natural Sciences.

There are three basic reasons why some of us study science, as well as numerous smaller ones, most of which refer to the many specialized branches of science. The three are, briefly, Man's innate curiosity about himself, about other men, and about the physical and biological world around him; Man's natural desire to decrease the amount of manual labour he must do to survive on this planet; and last, but not least, Man's desire to lengthen the span of his life.

While all scientists are motivated in their endeavours by personal curiosity concerning the world around them, a rough division or classification of the sciences may be made on the basis of the reasons stated above. The biologists, the physicists, the chemists, the geologists, the mathematicians and the astronomers will all name "curiosity" as their prime motive for study in their particular fields (other than such base considerations as earning a living, of course); whereas the engineer and the "practical" or "applied" scientist is particularly interested in the design and development of new devices to make modern man more comfortable in his daily life; and thirdly, it is the doctor and medical researcher who are chiefly interested in the health and life span of mankind.

Philosophical discourses have waxed long and loud on "scientific method," but the only really important thing to remember about it is the requirement that we must always appeal to experiment or nature itself, before we can substantiate any theoretical development. The necessity of the experiment, or direct observation upon nature, is well illustrated in the case of Aristotle, who came to quite wrong conclusions because of his failure to observe nature directly. When the scientist, be he physicist, chemist, biologist or geologist, has collected together a group of more or less related and experimentally verified facts, he tries to develop a unifying theory on the basis of these facts in an attempt to point out relations among them and possibly predict new phenomena. The synthesis of an elegant mathematical theory is the most important goal in the mind of the physicist and to a lesser extent, the chemist; and this aim has produced such remarkable feats of the human intellect as Einstein's relativity

theory and quantum theory. Both of these theories are the result of the scientist's attempt to explain the facts observed in the laboratory, and in the larger realm of the macrocosmos.

The theories of modern science would not have been possible without the scientist's almost "blind" faith in the essential orderliness of the universe; or, in more technical terms, faith in the validity of the method of mathematical induction. Such broad generalizations, as are employed in modern theoretical work, could not be used if we lived in a capricious sort of world in which, for example, an individual weighed one hundred and fifty pounds one day and one ton the next. The method of mathematical induction requires that an infinite number of similar experiments be performed before a general result can be stated; whereas we assume that if an experiment gives a certain result after say ten, or perhaps a hundred trials, (or any other reasonable number) then, *because of the essential orderliness of the universe*, we can conclude that the experiment would give the same result if repeated an infinite number of times. (If the semanticists or philosophers do not approve of the use of the word "infinite" in this sense, we can substitute "an arbitrarily large number of times"). It might be well to state again for emphasis that the *validity* of the step from the particular to the general, or from the small, finite number of trials to the assumption concerning an infinite number of trials, *cannot be proven* but it is an *assumption* which we are forced to make in all scientific theories.

In contrast to the natural scientist's demand for experimental verification of theory, the mathematicians, since the beginning of the nineteenth century have been developing many mathematical theories completely independent of any connection with "physical" reality, or the external world. These theories have been developed for purely aesthetic reasons, and it is a commonly held fact that the contemplation of the cold austere beauty of many mathematical theorems is a rare delight, seldom experienced by anyone except the privileged few who study this somewhat unpopular science. But returning to my original thought, the remarkable fact about these theories which seemed, at the time of their development, to be completely divorced from reality, is that in many instances they have proved to be of almost incalculable practical value in the development of physical theories of the universe. The most noteworthy modern example of this phenomenon is Einstein's use of Riemann's non-Euclidean geometry in his general theory of relativity. In fact, the originators of non-Euclidean geometry, Gauss, Bolyai, and Lobachewsky, were almost afraid to publish their results at first, for fear of losing their reputations for even thinking such wild thoughts; however, it was Einstein, some sixty years later, who showed that the geometry of the universe was actually of a non-Euclidean character.

A rather paradoxical situation exists today in science. The desire for greater generalization has led to the oft discussed specialization familiar to most everyone. Even in the biological sciences this trend is evident, although the generalization has not been as great as in mathematics, physics and chemistry. The specialization in biology has led to the necessity of spending almost a whole lifetime in order to make an exhaustive study of even the simplest organism. In all the various branches of science, the many specialists have developed nomenclatures and symbolisms which someone outside the field is at a complete loss to understand. This tendency is unfortunate for it robs one of an overall

picture of science and its progress, and leads to the rather sad mental attitude in which the platyhelminthologist thinks flat worms are the most significant and interesting beings in the world today, and the topologist thinks the geometry of doughnuts, pretzels and similar objects is sufficient for a clear understanding of all physical science. This might be construed to be a slight exaggeration, but the situation certainly exists. (Witness the emphasis on physics and mathematics in this article.) The most unfortunate fact of all is that there seems to be no possible way out of the labyrinth.

Another remarkable feature of modern science has been the appearance of the so-called 'border-land" sciences. This phenomenon is, of course, due to the gradual fusion of the various pure sciences. A biologist needs to know more and more chemistry, the chemist more and more physics, and the physicist more and more mathematics; thus the first half of the twentieth century has witnessed the full bloom of such studies as biochemistry, biophysics, physical chemistry, applied mathematics and cybernetics, to name but a few. With the possible exception of cybernetics which is the mathematics of control and communication in the animal and the machine, the object of these studies should be fairly obvious.

It is hoped that the foregoing remarks have satisfied the need for an over-all picture of the trends and present state of science in general. The following articles on individual subjects should clarify what has been said above. Before passing on to these articles however, a few remarks might be made regarding the relation between science and some other fields of endeavour such as the humanities, religion, business and government.

Since the middle of the eighteenth century, science has been recognized as a discipline worthy of study in institutions of higher learning, and it has now overshadowed the humanities in terms of the number of interested students, and its so-called "practical" value. However from the purely philosophical point of view, science and the humanities provide but two different ways of contemplating man and the world around him, depending in large measure on the psychological or emotional condition of the individual. In his popular book, "The Nature of the Physical World," the late Sir Arthur Stanley Eddington, one of England's greatest astrophysicists, compares two descriptions of "The Generation of Waves by Wind." The first is scientific, taken from a treatise on hydrodynamics, written in the usual terse mathematical manner, while the second is poetic and gives us a magnificent picture of the wind and waves on a moonlit lake. There is equal truth in both descriptions; the first satisfies your intellect, while the second satisfies your soul. Eddington then says, "Life would be stunted and narrow if we could feel no significance in the world around us beyond that which can be weighed and measured with the tools of the physicist or described by the metrical symbols of the mathematicians." I think this is an adequate and generous expression of the feeling of most scientists toward the humanities; the poet provides us with a description of men and the world, the like of which science, by its very nature, could never offer.

Since the "Tennessee Monkey trials", the open war between the organized church and science, which began with Copernicus and the helio-

centric planetary system, and continued through Newton's gravitation and Darwin's evolution, has died an all too late death. Today a much more common sense attitude of understanding and tolerance prevails, and most everyone has realized that both theology and science are necessary for the full development and future progress of civilization.

Business and governments are eagerly seeking scientific personnel to man the many research laboratories around the world, and the last two wars have greatly accelerated scientific progress in almost every field. The more recent developments such as antibiotics, atomic energy, radar, and the like, are familiar to all of us, and little need be said in this connection.

We shall now pass on to the consideration of the pure sciences in greater detail.

Mathematics

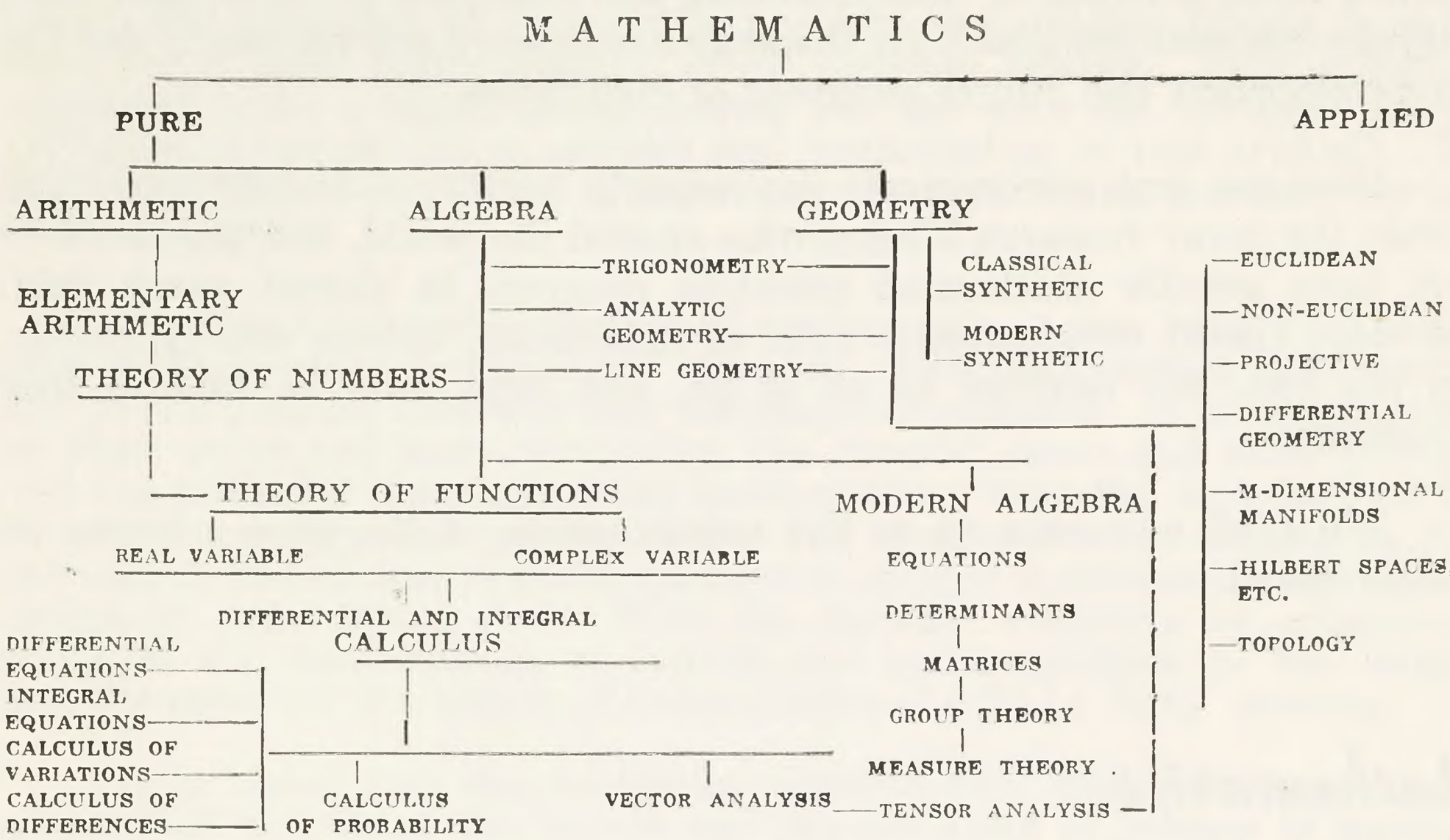
HOWARD L. FERGUSON

THE word "Mathematics" is derived from the Greek "Mathēmatikē," and is the oldest and most fundamental form of science. It had its origin when primitive man first recognized a practical need for number, quantitatively descriptive words, and simple measures.

By 2000 B.C. the Babylonians recorded transactions involving grain, oil, date wine, and cattle as invested-capital; interest was computed in terms of grain or silver. Since that time the history of mathematics has traced the transactions of commerce, which were very crude at first but have gradually become more refined with improvements in the methods of calculation. Early arithmetic was a laborious process, but today we have interest tables, tables of logarithms, and calculating machines.

The science of mathematics is divided into two main fields, pure mathematics and applied mathematics. The fundamental difference between the two is a difference in method. In pure mathematics the hypotheses, which a set of entities are to satisfy, are given, and a group of interesting deductions are developed. In applied mathematics the "deductions" are given in the form of the experimental evidence of natural science, and the hypotheses, from which the "deductions" can be deduced, are sought. Accordingly, treatises on applied mathematics are directed to the criticism of the "laws" from which the reasoning starts, or to a suggestion of results which experiment may hope to find. Thus applied mathematics is the

practical application of pure mathematics, the main fields of which are given in the following table.



Mathematics is the most indispensable of the sciences. This is true because a very great part of our thinking is concerned with functional relationships; that is, it deals with pairs or systems or corresponding values, states, or changes. For example, the sociologist seeks to determine a law of correspondence between the homogeneity of a population and its peacefulness, the anthropologist attempts to find a formula correlating mental power and brain-weight, the physicist determines a dependence between presure, temperature, and volume of a gas and so on.

In short, mathematical representation has come to be, to the worker in other fields, the only means by which complicated laws, relationships, and dependences can be compactly and exactly expressed. The trend in mathematics is now toward greater and greater generalization so that the applications are ever more widespread.

In recent years the importance of pure mathematics has vastly increased. The relativity and quantum theories are dependent upon mathematical reasoning for their exact formulation, and mathematics is the most powerful tool in the armoury of the physicist, cosmologist, and astronomer. Modern thought concerning the universe (embodied in the science of cosmology) is becoming more and more complex, from the mathematical point of view, as the works of Eddington, Jeans, Milne and Einstein readily show; the only unfortunate aspect of this trend however, is that the average person is unable to grasp their full significance because of his unwillingness to study the "Queen of the Sciences."

Physics

LLOYD V. WALLACE

PHYSICS is an investigation into the phenomena associated with inanimate matter. In the Greek era physics included all of Natural Science—Biology, Astronomy, Chemistry and Geology, but from time to time these have been excluded and given a name and individuality of their own.

The Greeks were the first known people interested in associating cause with effect, but unfortunately were over-fond of speculation and reluctant to observe nature carefully and conduct experiments. Phythagoras introduced the idea that streams of particles from the eye, which, when reflected from an object, re-enter the eye to produce vision. Democritus first evolved an atomic theory of matter, based on the assumption of eternal, invisible, indestructable, and incompressible atoms. He assumed fluid atoms to be spheres so they could easily flow past one another and metallic atoms to have hooks attached to prevent easy sliding. Aristotle left the greatest impression of all the Greek philosophers, and probably the most false: in his "Mechanics," he says, "The moving body comes to a stand-still when the force which pushed it can no longer so act as to push it."

Physical thought progressed little until the seventeenth century when such men as Kepler, Gallileo and Newton made great strides forward. Kepler evolved three laws of planetary motion which still give the simplest and best description of the observed facts. Gallileo, called the "Father of Experimental Physics," made careful observations of nature, prepared hypotheses based on these observations, and then performed experiments, the results of which would indicate the veracity of his hypotheses. Newton was the founder of classical mathematical physics.

By 1895 so many of the phenomena of the physical world had been satisfactorily explained that some men thought little time would elapse before all of its problems would be solved. Developed on the basis of Newtonian Mechanics, physics had grown into the fields of heat, electricity, optics, sound, and properties of matter. The end of the road was in sight. Then in 1895 Röntgen discovered X-rays; in 1896 Becquerel discovered radio-activity; in 1900 Planck introduced the Quantum Theory; and in 1905 Einstein set forth his Photoelectric Theory and later his Relativity Theory, which was prompted by the shortcomings of Newton's mechanics.

It has been shown that Relativistic Mechanics includes Newtonian Mechanics only as a special case when velocities are small compared to that of light, and masses large compared to that of the atom; whereas relativity theory gives correct results when the velocity of the system under consideration approaches that of light, and when the masses are of atomic magnitude. Quantum Mechanics hypothesizes that energy or momentum exist in nature in discreet, indivisible quantities, whereas it has formerly been considered completely continuous and homogeneous. On

these bases, the microscopic phenomena of the atom are being studied and macroscopic phenomena in many fields are studied as the sum of many microscopic phenomena.

Principal research being done today is in the field of nuclear physics, and in step with this is theoretical physics in the form of quantum mechanics, applied to almost all fields of classical physics. A great deal of time and work has been spent in attempts to solve the problem of the nucleus. Much has been accomplished, but with each accomplishment more problems are discovered and the explanations become more involved and more abstract. No complete and unified solution has been found, and some even doubt that such a solution exists. We have a finite intellect and are ever attempting to broaden the bounds of comprehension, yet the infinite is surely unattainable.

Chemistry

RICHARD W. FORD

PERHAPS the best known, and most widely used of all the sciences is Chemistry. Bounded on one side by Physics, and on the other by the Biological Sciences, Chemistry leans on the knowledge of each, and applies it to an ever-expanding understanding of the nature of matter in the world around us. But a chemist is not limited to the study of naturally occurring materials; he is able to actually change, and often to improve the substances nature has so bountifully provided; however, this has not always been so.

Man for countless ages, has utilized chemical processes for his own benefit. For example, he knew how to use fire to cook his food and keep himself warm, almost since time began. Very early also, he discovered that certain herbs had profound effects on the human body, some deadly, some beneficial. Another chemical process provided early man with alcoholic beverages through the reaction which we now call fermentation. However, early man did not understand these processes, with the result that he could do nothing to improve on them.

Gradually, however, some basic facts emerged. For example, it was discovered that a candle burning in an enclosed space soon went out, and the air left in the container could no longer support life of any kind. In the case of physiologically active plants, it was found that by making extracts from the plant with various solvents, the active ingredients could be removed and concentrated; still progress was very slow and haphazard.

Then came the period when the alchemists flourished. These early workers were looking for a so-called "philosopher's stone," which they believed would turn lead to gold. Their main search proved fruitless but they did uncover many fundamental principles which led eventually to the science of Chemistry as we know it today.

The advent of Dalton's Atomic Hypothesis, and Proust and Berthollet's Law of Definite Proportions provided the first great impetus to chemical science. Other laws were soon added until the structure of inorganic chemistry became firmly established. But the theory of a "vital force," necessary for the production of natural products, and found only

in living matter, confined the chemist to inorganic substances, and ruled out any work in the great field of Organic Chemistry. This situation existed until Wöhler made the astounding discovery that he could produce urea, a product of human metabolism, in a test-tube from inorganic substances. The chemist's world was shaken to its very roots. Many maintained that the "vital force" was present in one of Wöhler's reagents which he had obtained from an organic source. But as more and more natural substances were synthesized in laboratories, some from purely inorganic sources, the vital force theory was finally discarded. And then the rush was on.

Chemists all over the world turned to the exciting work of producing all sorts of organic substances. Some tried to change natural substances; others tried to produce scarce natural materials from more abundant sources; still others started producing compounds which Nature had never seen fit to provide as a natural product. The result was a sudden rise to popularity of synthetic materials, plastics, dyes, synthetic fibres, synthetic drugs and many other wonderful substances which came pouring out of laboratories the world over; and the work is still expanding at a phenomenal rate.

A noticed effect of this was the fall from favour of inorganic chemistry. Little seemed left to do in this, the oldest field, but with the advent of atomic energy this field is again opening up. Many problems are now facing the inorganic chemist and he realizes now just how little he does know of the "simple" substances.

Meanwhile another branch of chemistry had started to develop, namely, physical chemistry. A worker in this field basically strives to apply the theoretical knowledge of chemical reactions as found in inorganic chemistry, to the more involved organic reactions. While the organic chemist was busy grubbing in his dye vats, cooking up all manner of vile smelling compounds, sometimes getting what he wanted, sometimes, in fact more often than not, getting something he didn't expect, the physical

chemist was busy trying to explain the results, but gradually he became so carried away with himself that he became in part a synthetic chemist also. However, the physical chemist is usually more systematic and logical than his organic brother. Instead of throwing some reagents in a flask and cooking for three hours, he strives to predict the results of a given reaction before he does it, basing his reasoning on known facts. Having thus theorized, he also throws the reagents in a flask, and cooks for three hours, perhaps with a little more care, but the results in the two cases are usually much the same. The big difference is in the chemist's own reaction. The organic man says, "I didn't think it would work" and the physical chemist says, "I must have miscalculated somewhere."

Having thus brought you up to date on the three major aspects of Chemistry, we now turn to some present problems in the field. Obviously it would be impossible to cover everything that chemists are trying to do. Therefore, we shall draw our examples from work presently being conducted at this University. Dr. Sivertz, our physical chemist is striving to perfect synthetic rubber. Dr. Pattison is developing new and better insecticides as a flourine organic chemist. Others are working in the field of sex and adrenal cortical hormones related to cortisone. In general then we can say the chemist's main objectives are to gain a better understanding of how matter is formed and then to improve and add to the gifts Nature has bestowed on us.

Geology

LYLE PRETTY

"From the spirit of inquiry and the love for gain springs forth the desire to explore."

G. VIBERT DOUGLAS,
in "Mineralization in Northern Rhodesia"

FROM sandbanks to solar system; from waves that beat on modern shores to crystalline, contorted rocks that settled as mud in seas of two billion years ago, the story is long, diverse, and complex, yet not too incomprehensible to be narrated. It is best told through the lives of men —men who in their different ways loved our planet and laboured to make it known. Their successes became the stuff of earth science; their failures show how it forged forward though impeded by ignorance, adverse times or human fallibility. From such investigators came the modern picture of our planet, with its sweep of geologic change that rises from an ancient past and forms a foundation for the future.

The history of geological thought and investigation shows that acute observation and intelligent reasoning were not lacking from the earliest times, but little or no consistent progress toward modern geological science began until the latter part of the 18th century.

Geological thought was retarded in ancient times by fables, myths, and legends; in the middle ages by the swallowing of the ancient Mediter-

ranean culture by barbarians from north and east, as well as the religious dogma present after the fall of the Roman Empire.

Modern geological thought had its real birth in Scotland, with James Hutton (1726-1797) as its leader. In his epic-making, "Theory of the Earth," he emphasized the fact that all the earth's processes are dynamic, and not static; that present recognizable geological features and processes, had their counterparts throughout previous geologic time.

With the advent of mature geologic knowledge in the new world, these men of rocks became pioneers, journeying into unknown regions where they shared the glory of voyageurs and frontiersmen, of LaSalle, Fremont and DeSmet. Wresting facts and viewpoints from a vast wilderness, they achieved stature commensurate with the country and set a precedent for bold explorations which now penetrate depths of land and sea, reach into polar wastes, and cross interstellar space seeking an origin for our planet.

These triumphs have given to us a new, and improved world outlook; they have added to the comforts which we possess; they have helped us build up stores of knowledge with which we make use of the earth and improve our lot upon it. Need we have a better reason to study their contributions to our science, society and present economic status?

Zoology

P. MANN

ZOOLOGY, the science of animals, has advanced considerably from the time of Aristotle and through zoological knowledge man has been better able to adjust himself to his environment and his environment to himself. He has been freed from many superstitions and fears by explaining one by one the mysteries that had held him in bond for so many centuries. But these advances and explanations have not been steadily or easily attained.

From Aristotle's day to the fifteenth century is a period marked by little or no original contributions to zoological knowledge. Men of these times were content only to make compilations of earlier works. The renaissance period saw men again performing experiments, dissections, and making original observations. Men such as Vesalius and Wm. Harvey produced work so advanced and new that it met with opposition from all sides, both from the church and from their contemporaries. The church opposed it on the grounds that the findings were contrary to their teachings, while their contemporaries opposed it because the results were contrary to those set down by such writers as Galen and Pliny.

The opposition was finally overcome and zoological science entered a new era which has carried through to the present day. This is the era of the controlled experiment, quantitative results, and deductive reasoning; it has been helped along by the printing press, the microscope, chemical

progress, and physical apparatus. Thus we have reached the level at which we find zoological knowledge today.

The practical value of zoology can hardly be overestimated for along with botany it forms the basis of medicine, agriculture, and conservation. Biological studies are responsible for our pure water, pure food, balanced diet, and protection against disease germs and animal parasites.

Genetics, one branch of Zoology, with its studies in heredity has revolutionized plant and animal breeding and has had some effect on that of human beings. The divisions of zoology are many and varied but each has added knowledge which has enabled us to live better and safer lives.

Botany

GLORIA BELLINGER

TO the average person, the word Botany brings to mind a picture of a mousy little individual, who talks in a jargon all of his own, and whose main interest in life is collecting, pressing and identifying weeds and flowers. To the college student, exposed to an introductory course, Botany is mainly a matter of looking at "pickled material" under the microscope and then making drawings that include all of the details that the demonstrator insists are there, "plain as plain can be." Botany, however, encompasses much more than that.

The word "Botany" is derived from the Greek word "botanē," meaning "herb" or "plant," and early botany was little more than a study of food plants. When primitive man discovered that plants supplied food for the maintenance of himself and other living things, he began to collect

seeds and plant them in crudely prepared plots of ground. With care, he brought about the domestication of a few plants which were of use to him. He had a special interest in plants that had medicinal and curative powers, and from this study developed the biological sciences now known as medicine and pharmacy.

Today, botany is a composite science. For a study of botany in its broadest sense, one would need to master all of the systematized knowledge of plants that has accumulated through the centuries. The major divisions are as follows: Taxonomy, Morphology, Physiology, and Economic Botany. Since Economic Botany, which includes a study of all the plants which are useful to man, is of more interest to the layman, let us consider this phase in more detail. Economic Botany can be broken down into the smaller groups of Agronomy, Horticulture, Forestry, Floriculture and Bacteriology. In the last thirty years, the emphasis has been placed on Plant Pathology in an effort to discover the causes of the diseases of economic plants and to work out means for the treatment, control, prevention and eradication of such diseases. This work has included studies on Wheat Rust, White Pine Blister Rust, Dutch Elm Disease and Potato Blight. Bacteriology has become a very technical field because of the relation of bacteria to the health and daily life of man and other living things. In the last ten years, the wonder drugs, penicillin, streptomycin and auriomycin, have played an important role in man's war against disease.

Everyone likes plants. Go to the poorest shanty and you'll find the window sills filled with geraniums potted in tomato cans. Lawns, trees, and gardens help to make a house a home. The plant, however, plays a more important role than merely providing beauty for the jaded eye. Civilized man could not have advanced without the aid of plants. In any region entirely without plants there can be no permanent animal or human life. In the history of the earth, vegetation had to develop first in order to nurture animal life as we know it today. Only green plants are able to manufacture food, the absolutely essential material for all living things. Plants also provide us with drugs, beverages, textiles and woods. They are the original sources of coal and petroleum. Botanical knowledge forms the basis of many healthful hobbies such as gardening and landscaping. It provides a stepping stone to farming education, park and forestry service, wild life and game conservation, plant disease control and plant breeding. Is it any wonder that so many people find the study of Botany a fascinating and absorbing occupation?

"Poetic Experiences are Valuable
in the same way as any other Experiences.
They are to be Judged by the same
Standards."

—I. A. Richards

Poetry

NAN CLEGG
MARILYN DAVIS
SHIRLEY McKENZIE
PAT SIFTON
CLIFFORD BALLON

To Nora

NAN CLEGG

Lately, now, the overlapping of our every
thought has ceased,
Our blossom long since blowing full is paled,
Forgotten footsteps, I, who walked beside
you;
For mellowness is sharpened by bare days
that stretch between.
But, look, I wear within my heart the blos-
som paled,
Oh, do not, anyone, give me a new red
flower;
I cannot, must not, breathe a sweetness fresh
That might alter what I know of only you.
Like petals in a book, pressed carefully—a
delicate surprise—
And love that mended well a vase slipped
from a little grasp—
No, I am not angry at the staring emptiness,
nor frightened on my solitary road,
But, rather, I am warm with yesterdays and
Time undawned—
For whom to judge we are not, always will
be, just the same?

The Constant Heart

If you tire of your listed hours,
And measured moments will not set you free,
I offer you my heart wherein you may
Forget life's clock-like stare and rest with me.

But care you not to flaunt old tethered Time,
And each day take the reins up with a will,
And then I must find a convent for my heart
And love you still.

Remembering You Said You Would Be Back

NAN CLEGG

On the quiet breast of evening,
Neath a moon of whitely grace,
I hear footsteps in the shadows . . .
Phantom lips upon my face.

And my labored heart lies longing
Through the night; its secrets yearn . . .
Ever keeping burning vigil,
For that day you will return.

After Thought

When sneezing winds arrest the warmth in me,
And trees stand sugar-dipped against the sky,
'Tis then I shall recall a busy man,
Whose skill escapes all echo of good-bye.

I floundered in the distance of his line
That won by winking-words astray the fold—
With eagerness I breathed his happiness
Until I found that even dreams grow cold.

"Could Time but pause for him," that was my dream;
Yet, I absorbed his cares only to know,
A sport of flavored smiles and liquid eyes . . .
For playboys leave no footprints in the snow.

Grey Beauty

MARILYN DAVIS

Mist of the lake, mist of the hill,
Mist of dusky morn be still.
Calm of the air, ghostly fair,
Greyest dawn, beauty rare.

Shiver and shake, shadows that make
Vague and dark moods on the lake;
Liquid night, Stygian sight
Seen by light dimly bright.

Stealthily glide, thief from its lair,
Creeping fog with streaming hair,
Ebb and flow, slow, slow,
Near the shore cattle low.

Distant and shrill, rise from its nest
Screaming loon, morning's jest.
Through the grey, far away
Dip and glide blue-jay.

Eye of the morn, blind your stare,
Heed such beauty if you dare.
Still the grey—its mount and sway
Hides the sun from the day.

Phantom of light, gently merge
Grey on the grey of the water's verge.
Lap and swell, dip and rest,
Water's surface, breathing breast.

Hauntingly grey, trembling day
Rouses man from where he lay.
There to hear, nothing fear,
Only know Thou art near.

The Long Dark Room

SHIRLEY McKENZIE

A little red lamp so dimly lights
the long dark room
in which we either stride or stand
between the odd bobbing flume

Rarely do we ever recognize
the eye to eye greetings
greatly soothing some sore eyes
in these muddled meetings

Rarely do we even remember
the garb of the members
who might show well-thought taste
in selecting furs

Because we constantly are busy
burying a casual comment
concerning the critical winter
that we anxiously underwent.

For we dimly see inside the window
of the long dark room
frost forming dangling icicles, waiting
spring to melt the gloom.

Here under the little red lamp
of the long dark room
some become fiery red, others glow red
and some forget the red bloom.

Harvest

PAT SIFTON

Come love and let us play a while,
Tumble in the hay through the hot noon hour.
In the weedy fence corner let the sickle rust,
Today we do not care.

Let the juicy berries drop from the prickly bushes
In the green, sultry shade.
The sheaves droop golden in the summer sun;
Our kisses do not heed the call to harvest.
Let the blackbird have his fill,
We have no need of summer's stores.
For now the hay is sweet with clover
And the mist is on the shadowed hills.

The hay is in your hair, my love,
Mine, too? I do not care;
Come, kiss me once again and let me close my eyes
Against the heat of noon, and your sweet lips.

Saturday Night

PAT SIFTON

I. THE SEARCHERS

Long shadows fall across the greying sidewalks
And verandahs creak with after-supper rockers.
Street lamps are denser in the deepening dark
And crickets persevere in the lawn-cut grass.
A thousand women in the twilight longitude
Stand in their slips before their mirrors
And powder their faces into smiling commonplace.
A thousand men straighten their ties
With well-manicured hands
And jingle a pocketful of change,
Turning the corner of month-old familiarity.
The night lies before them
New and untouched.
They cling in the moonlight
And let lips blend,
Touch hands, touch lips, and that is all.

Saturday Night (*Continued*)

PAT SIFTON

II. THE FORGOTTEN

Yellow windows gleam from darkened houses
And the wind is cold through barren streets.
A thousand women watch wild geese fly, wing to wing,
Over the dimming city,
And yet are bitter.
Small rendezvous in large hotels,
A little liquor, just enough,
And a ride home alone in a taxi
To a locked house where no one waits,
And the wind shakes the panes of an upstairs window.

III. THE DESPAIRING

Such a little time now, before another Spring
Comes 'round again, and with it
Another round of gaiety
For youth and young blood to revel in.
Hurry now, before it is too late!
A thousand women, ample bosoms heaving
With liquored laughter,
Twist painted mouths in smiles of innocence.
A thousand men, hatless, tieless,
Stretch grubby hands in bawdy anticipation.
No whistled tune, the juke-box roars
Itself to sleep.
And with it sleep a thousand men and women;
The beds are full, to suffocation.

IV. THE LOST

The painted mouth, once sweet,
Then daring, and now tired,
Pouts upon a cigarette.
A gaudy shoe grinds the butt into the sidewalk.
Children play at marbles in the fading sunlight.
"Are these my children,
Or do they belong to a thousand other women
Who loved their men, and won?"
The star is gone that I saw once, and shunned.
It rose and fell in a shining streak.
But I did not know,
I did not know
That it was meant for me.

Lyrics

CLIFFORD BALLON

I.

Oh, cut me a piece of your cake castle snow frosting
And I shall be merry the length of the day.

Let me romp in the mist clouds — God's polar bear carpets —
And I shall be merry the length of the day.

Let me lick up a red rose and eat up the tulips,
And I shall be merry the length of the day.

Let my feet play at noonday and throw away nighttime,
And I shall be merry the length of the day.

II.

The new day glows in the eastern sky like a rose of flamingo red,
While I stand knee-deep in the pink blue mist that has been my midnight bed.

From some strange, unknown quarry was carved that mutable marble sky,
And I watch in quiet wonder till a brown bird voices my cry.

Seasoned Sentences

There are two types of poetry: one is read by peasants who understand and enjoy it, and the other is read by intellectuals who enjoy it.

God is the only one who can smell the blood in the throats of those who kill with iron tongues.

Happiness is time unharnessed racing down the corridor of space and into the bright room of a new day.

The clouds are wrought from the winter breath of a god.

The lovers, who are God and His Saints, speak in flowing whispered silences which run like some dark river underground, soundless, far from the ears of men.

Lou Ball Clothes

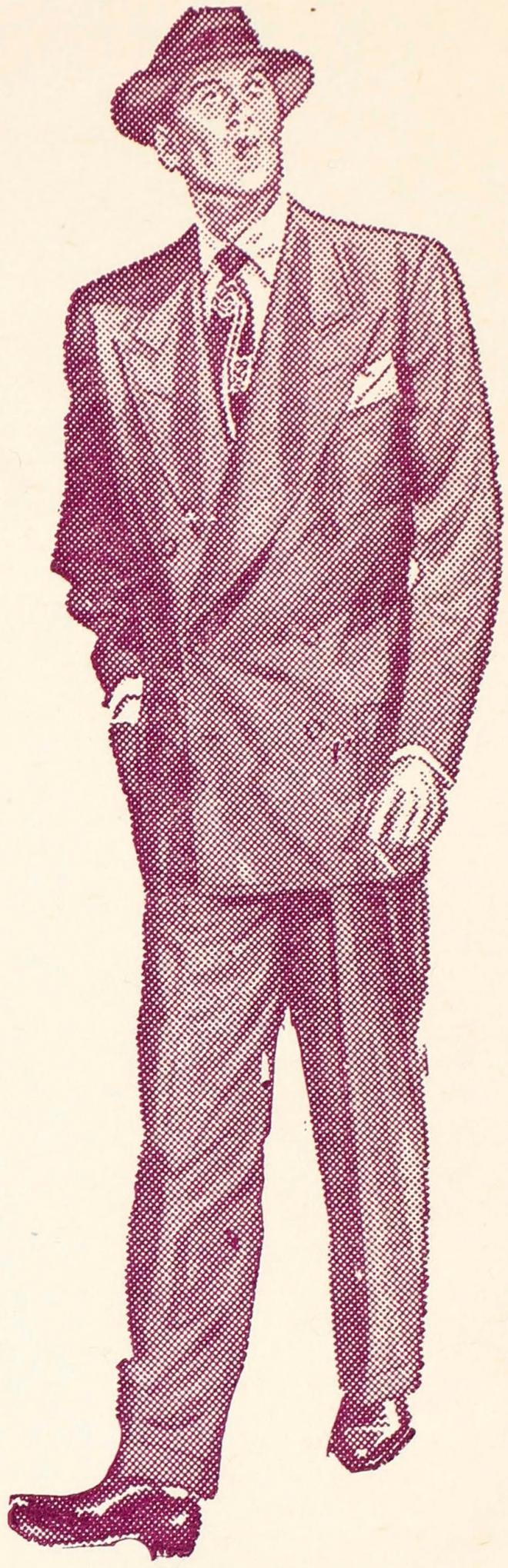
We invite you to drop into any of our three London stores and see the stock that is selected with the young man in mind.

Tailored by:-

Towne Hall

and

Cambridge



"The Home of Smart Accessories"

Included in a smart line of furnishings are shirts and sweaters bearing the labels of famous Van Heusen, Chetland, Tony Day, Regent Knit and many other favourites.

"A Personal Interest in your Satisfaction"

Lou Ball Clothes

Sponsor of Lou Ball Hockey Team

—— 3 STORES ——

Main Store:
Cor. Talbot and Dundas
Dial 3-5381

Open Evenings

London East
614 Dundas St.
776 Dundas St.

—— "THE STORES FOR MEN" ——