

FOCUS ON EXCEPTIONAL CHILDREN

THE EFFECTIVENESS OF THE KEPHART-GETMAN ACTIVITIES IN DEVELOPING PERCEPTUAL-MOTOR AND COGNITIVE SKILLS

Libby Goodman and Donald Hammill¹

EFFECTIVENESS OF VISUAL-MOTOR TRAINING ACTIVITIES

The intense concern of educators, psychologists and parents with sensorimotor training has been one of the more remarkable phenomena in special education of the last fifteen years. This interest is reflected in several ways.

First, numerous perceptual and/or motor evaluation devices have been constructed, e.g., the Perceptual Survey Rating Scale (Roach & Kephart, 1966), the Developmental Test of Visual Perception (Frostig et al., 1964), the Chicago Test of Visual Discrimination (Weiner, 1965), the Developmental Test of Visual-Motor Integration (Beery & Buktenica, 1967), the Drawing Coordination Test (Slosson, 1967), the Primary Visual Motor Test (Haworth, 1970), and the Motor-Free Visual Perception Test (Colarusso & Hammill, 1972).

Second, many perceptual-motor training programs, varying from highly sequenced instructional packages to loosely structured collections of activities, have been developed. Of these, the contributions of Frostig (Frostig & Horne, 1964), Kephart (1971), and Getman (1962; Getman & Kane, 1964; Getman et al., 1968) have been particularly prominent.

While these professionals may differ slightly among themselves regarding particular theoretical points or remedial techniques, they seem to agree on two fundamental assumptions:

1. Visual-motor adequacy is important to, if not essential to, cognitive (including academic) success.
2. These visual-motor processes are in fact trainable in most children.

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Both Kephart and Getman seem to be making this case in the following statements.

There is much evidence to support the presently held conclusion that every child can be benefited to some degree by the meaningful activities and experiences which develop the visual skills that can lead the child toward reading ability. (Getman, 1962, p. 21)

His reading, writing and arithmetic success will depend largely upon how well his eyes move across the pages of his readers and workbooks. Since these movement skills are learned, they can be improved through training and guidance. . . .(p. 27)

It will frequently be found that difficulties which the child encounters in the more complex areas of learning are owing, in part at least, to failure to lay a firm foundation in the more basic perceptual-motor skills. Thus the child who cannot monitor a continuous activity or who cannot deal with sequential elements in a task is poorly prepared to manipulate forms and figures. The child who cannot interpret perceptual data or who cannot control his perceptual input is poorly prepared to deal with the perceptual problems of reading. The child who cannot manipulate concrete objects in a sequential fashion is poorly prepared for the symbolic manipulation of concepts. Such advanced activities will come more easily to the child and, in some cases, will become

possible for the child if he is first given a firm foundation of perceptual-motor skill. (Kephart, 1968, p. 191)

To date, a large body of research literature has accumulated which relates to the effects of visual perception and/or motor training on the visual-motor, cognitive, and academic growth of children. For the most part, this literature has focused on the Frostig-Horne (1964) program and on the techniques suggested by Kephart (1968) and Getman (1962). As the studies which pertain to the Frostig approach have already been compiled (Hammill & Wiederholt, 1972), we have decided to restrict our review to those research reports which studied the efficacy of the Kephart-Getman techniques.

THE KEPHART AND GETMAN APPROACHES

The Kephart and Getman training programs are similar in many respects. Both programs focus on the development of motoric and visual skills in young children and embody a developmental sequence of visual-motor skills. Specific performance areas are designated. Within each performance area, a hierarchy of skills and detailed suggestions for training are presented. The following represent the five training areas of the Kephart program:

1. Perceptual-motor training
2. Perceptual-motor match training
3. Ocular control training
4. Chalkboard training
5. Form perception training

Training begins with gross motor activities and advances to fine motor skills with an emphasis on eye-hand coordination. Eye movement control and perceptual monitoring of motor activities are important aspects of the training program.

Since its initial publication in 1962, the Getman program has been updated and revised twice (Getman & Kane, 1964; Getman, Kane, Halgren, & McKee, 1968). The most current edition has six developmental training areas:

1. General coordination
2. Practice in balance
3. Practice in eye-hand coordination
4. Practice in eye movements

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5. Practice in form perception
6. Practice in visual memory

Though the Getman program generally parallels that of Kephart, it is more structured and includes some language activities. Also, while the Kephart program is to be used primarily as remedial instruction for the underachieving child, Getman suggests that his program is for all children and can be used as a supplement to the regular kindergarten and first grade curriculum.

CHARACTERISTICS OF STUDIES REVIEWED

Forty-two studies which utilized the Kephart and Getman training techniques were located. In most of these, an adaptation of the Kephart program was employed. In some cases the training programs reflected a composite of training techniques drawn from more than one source. Any intervention study which drew heavily from or employed training activities closely resembling those of Kephart and Getman was considered relevant for this review.

Most of the studies used very small numbers of subjects, trained for only brief periods of time, or failed to employ a control group; as a result, their findings could not be accepted with confidence. In order to identify the "better" research reports and to restrict the number of studies to be discussed, the following criteria were established:

1. The study must have involved at least 20 experimental subjects.
2. The study must have included at least 12 weeks or 60 sessions of training.
3. The study must have utilized an experimental-control group design.

Sixteen studies satisfied all of the criteria; 26* did not. The characteristics of the "better" studies are presented in Table 1.

*The studies which failed to meet the criteria include the works of Argenti (1968), August (1970), Ball and Edgar (1967), Benyon (1968), Bosworth (1967), Early and Kephart (1969), Edgar, et al. (1969), Emmons (1968), Fisher (1971), Haring and Stables (1966), Haworth, et al. (1969), Hendry (1970), Heriot (1967), Lazroe (1968), Lyons and Lyons (1954), Maloney, et al. (1970), McClanahan (1967), McCormick, et al. (1968), Meyerson (1967), Murray (1966), Rutherford (1965), Sapir (1967), Shipe and Mieztis (1969), Simpson (1958), Sullivan (1972), Webb (1969).

Kindergarten or first grade youngsters were the subjects in 12 of the studies. In one investigation, children from kindergarten through second grade were involved. In two others, the subjects were educable retarded children. Pre-school youngsters were the subjects for only one study. The number of experimental subjects ranges from a low of 22 pupils to a high of 14 "intact classes." The median number of subjects was 46.

The actual amount of training received by the experimental subjects varied widely from one study to the next. While the shortest training period lasted only 12 weeks, the longest was carried on for an entire school year. The median training period was 20 weeks. Many of the studies provided so little information that the total hours of training time could not be estimated. For the studies in which sufficient information was available, an estimate of the total training time (rounded to the nearest hour) was calculated.

The standard two group design (1 experimental and 1 control group) was used most often. In some instances, however, multiple experimental groups were employed. In this manner it was possible to compare the effects of different treatments (McRaney, 1970; Okada, 1969; Pryzwanski, 1969); the effects of treatment at different grade levels (Wimsatt, 1967); and the effect of varying amounts of treatment (Turner & Fisher, 1969).

In these studies, the effects of visual and/or motor training on a variety of perceptual and cognitive abilities have been investigated. The instruments used to measure treatment effect include tests of visual and/or motor skills, school readiness, scholastic achievement, intelligence, and language functioning. For the purposes of this review, the tests have been grouped into three categories:

1. Visual-motor tests
2. Readiness tests
3. A composite group of intelligence, achievement and language measures

The tests of visual-motor abilities are of primary interest since, of all the instruments, these directly measure the skills which the programs purport to train.

EFFECT OF TRAINING ON VISUAL-MOTOR SKILLS

A total of 25 measures of visual and/or motor ability were included in the posttest batteries of 11 studies.

Table 1
Overview of Studies Utilizing the Kephart and
Getman-Kane Training Techniques

Author	Subjects	N	Length of Training	Type of Training
Falik (1969)	Kindergarten	23	1 school year U.T.E.**	Kephart
Faustman (1967)	Kindergarten	14 classes*	9 months U.T.E.**	Composite, Frostig, Kephart, Strauss
Garrison (1965)	First Graders	181	1 school year U.T.E.**	Kephart-like
Getman & Kane (1964)	First Graders	30	15 weeks 38 hours	Getman
Goodman (1973)	Preschoolers	22	5-6 months 22-29 hours	Composite, Kephart, Getman
Halliwell & Solan (1972)	First Graders	35	5 months 30 hours	Kephart-like
Hiers (1970)	Educable Retarded	25	60 sessions 30 hours	Kephart-like
Keim (1970)	Kindergarten	37	9 months U.T.E.**	Kephart-like
Lipton (1969)	First Graders	46	12 weeks 12 hours	Kephart
McBeath (1966)	Kindergarten	4 classes*	64 days 16 hours	Kephart
McRaney (1970)	First Graders	27	20 weeks 58 hours	Kephart-like
O'Connor (1969)	First Graders	59	6 months U.T.E.*	Kephart
Okada (1969)	Educable Retarded	2 classes*	16 weeks 24 hours	Kephart-like
Pryzwanski (1969)	Kindergarten	83	13 weeks 15 hours	Kephart
Turner & Fisher (1969)	Kindergarten	76	½ or 1 school year 180 or 360 hours	Kephart
Wimsatt (1967)	Kindergarten First Graders Second Graders	1 class* ½ class* 1 class*	1 school year U.T.E.*	Kephart

*Exact number not given.

**U.T.E. unable to estimate.

These tests are presented in Table 2. The results pertain to the performance of the experimental group within each of the studies which received the Kephart or Getman training. By inspection of the table, the reader quickly

discerns that the results are, for the most part, non-significant. The experimental subjects performed significantly better than the control subjects in only four instances. In one of these (O'Connor, 1969) the teacher-

Table 2
Significance of Differences Between Trained and Nontrained Subjects
on Tests of Visual, Motor and Visual-Motor Abilities

Author	Criterion Variable	P
Falik (1969)	Perceptual Test	ns
Faustman (1967)	Winter Haven Perceptual Ability Form Test	ns
Goodman (1973)	Ayres Space Test	ns
	Crossing the Mid-line (Southern California Perceptual-Motor Tests)	ns
	Imitation of Postures (Southern California Perceptual-Motor Tests)	ns
	Manikin Puzzle (Merrill-Palmer Scale of Mental Tests)	ns
	Motor Development Checklist	ns
	Position in Space (Developmental Test of Visual Perception)	ns
	Sequin Form Board (Merrill-Palmer Scale of Mental Tests)	ns
	Wallin Peg Boards (Merrill-Palmer Scale of Mental Tests)	ns
Hiers (1970)	Matching (Metropolitan Readiness Test)	ns
	Copying (Metropolitan Readiness Test)	ns
Keim (1970)	Matching (Metropolitan Readiness Test)	ns
	Copying (Metropolitan Readiness Test)	ns
Lipton (1969)	Developmental Test of Visual Perception	.01
	Purdue Perceptual-Motor Survey	.01
McRaney (1970)	Purdue Perceptual-Motor Survey	ns
O'Connor (1969)	Brace Johnson Tests of Motor Ability	.05
Okada (1969)	Developmental Test of Visual Perception	.05
Pryswanski (1969)	Letter Like Form Test	ns
	Visual Discrimination (Harrison Stroud Reading Readiness Profile)	ns
	Visual Discrimination (Gates McGinitie)	ns
	Visual-Motor Coordination (Gates McGinitie)	ns
Turner & Fisher (1969)	Purdue Perceptual-Motor Survey	ns
	Developmental Test of Visual Perception	ns

pupil ratio in the experimental class was 1 to 10, but the teacher-pupil ratio in the control class was 1 to 30 which suggests that the results be interpreted with caution.

In addition to reporting the limited effectiveness of training, Pryzwanski (1969) and Keim (1970) made some other interesting observations related to visual-motor training. Pryzwanski compared the effects of three types of fine motor training on levels of school readiness. He reports that the readiness scores of children who received manuscript training were significantly better than the scores of 2 other groups of children who participated in fine-motor activities based upon the programs of Frostig and of Kephart. Keim (1970) notes that the only significant gain in readiness was made by the control group. He also found that 60.0% of the experimental group and 42.9% of the control group with visual-motor deficits no longer evidenced visual-motor difficulties at the end of the treatment period. Keim concluded that the regular kindergarten program was nearly as effective as the experimental treatment in the elimination of visual-motor deficiencies.

EFFECT OF TRAINING ON READINESS SKILLS

Though the effects of visual-motor training on school readiness were investigated in 8 studies (see Table 3), significant improvements favoring the experimental group are reported only by Hiers (1970), Lipton (1969), and Turner and Fisher (1969). Surprisingly, the significant results reported by Hiers were due to superior scores on the Listening and Alphabet subtests of the Metropolitan Readiness Test. Training did not produce any appreciable effect, however, on the Matching or Copying subtests which most closely relate to the training activities. It appears that the treatment improved performance in auditory and cognitive skills rather than in visual-motor skills! In another study, Turner and Fisher (1969) found improvement in readiness without a parallel improvement in visual-motor ability, a finding which they recognize as theoretically inconsistent. They suggest that the results may be due to confounding variables and not the treatment. Therefore, in two of the three studies reporting training to be beneficial, the findings are at best equivocal.

EFFECTS OF TRAINING ON INTELLIGENCE, ACHIEVEMENT AND LANGUAGE

In contrast to the visual-motor tests which involve the manipulation of nonmeaningful information and readiness tests which are comprised of preacademic tasks, the tests in this category assess the child's ability to manipulate

Table 3
Significance of Differences
Between Trained and Nontrained
Subjects on Tests of School Readiness

Author	Criterion Variable	p
Falik (1969)	Metropolitan Readiness Test	ns
	Anton Brenner Developmental Gestalt Test of School Readiness	ns
Hiers (1970)	Metropolitan Readiness Test	.05
Keim (1970)	Metropolitan Readiness Test	ns
Lipton (1969)	Metropolitan Readiness Test	.01
McBeath (1966)	Lee Clark Reading Readiness Test	ns
O'Connor (1969)	Metropolitan Readiness Test	ns
Pryzwanski (1969)	Gates McGinitie Readiness Test	ns
Turner & Fisher (1969)	Metropolitan Readiness Test	.01

meaningful and symbolic information and require him to demonstrate academic and language accomplishments. The results are presented in Table 4. Only 5 of the 10 studies reported significant improvement after treatment. Wimsatt (1967) reports that the experimental kindergarten subjects made significant gains in reading aptitude. The improvement was due to the group's performance on the motor scale of the Monroe Reading Aptitude Test, thus indicating a positive transfer of training effect. However, as there were no significant improvements for the first or second grade experimental subjects and only a limited improvement for the kindergarten treatment group, he concludes that there is little evidence that visual-motor training benefits general learning abilities. In contrast, significantly better performance on tests of reading comprehension for first grade children who received supplemental perceptual-motor training in addition to their regular reading program were found by Getman and Kane (1964) and Halliwell and Solan (1972). Faustman (1967) reports significantly

greater gains in word recognition ability for the experimental group. Okada (1969) found that treatment produced significant improvements in the psycholinguistic functioning of first grade experimental children.

Table 4
Significance of Differences
Between Trained and Nontrained
Subjects on Tests of
Intelligence, Achievement,
Language Ability

Author	Criterion Variable	p
Falik (1969)	Metropolitan Reading Achievement Test	ns
Faustman (1967)	Gates Primary Word Recognition Test	.01
Garrison (1965)	California Achievement Test	ns
Getman & Kane (1964)	Combined Stanford Achievement Tests	.01
	Gates Primary Reading Tests	.01
Halliwell & Solan (1972)	Reading Comprehension (Metropolitan Achievement Test)	.05
Keim (1970)	Stanford Binet	ns
	Peabody Picture Vocabulary Test	ns
McRaney (1970)	Primary Mental Abilities Test	ns
	Metropolitan Achievement Test	ns
Okada (1969)	Illinois Test of Psycholinguistic Abilities	.05
Turner & Fisher (1969)	Slosson Intelligence Test	ns
Wimsatt (1967)	WISC (Kindergarten Sample)	ns
	Kuhlman Anderson Intelligence Sample (1st & 2nd Grade Sample)	ns
	Monroe Reading Aptitude Test (Kindergarten Sample)	.05

DISCUSSION

The results of attempts to implement the Kephart and Getman techniques in the schools for the most part have been unrewarding. Particularly disappointing were the findings which pertained to the effects of such training on perceptual-motor performance itself. For if training is not successful in this area, can the benefits of such instruction reported by Okada, Getman and Kane, and Halliwell and Solan be anything other than spurious? The findings presented in this review are not unique to Kephart-Getman. The same general nonpositive trend is evident in the literature pertaining to Frostig (Hammill & Wiederholt, 1972) and to other programs as well (Hammill, 1972).

If one can assume that the activities used in these "better" studies do represent the Kephart-Getman approaches, then their results can be used to test not only the efficacy of the activities but also the validity of the theoretical assumptions which underly the activities. With regard to this, the results of the intervention studies using Kephart or Getman techniques, taken collectively, suggest that such training is not particularly effective. Participation in the training programs produced little improvement in the children's visual-motor functioning. Their readiness skills were improved in only a few instances. Furthermore, the effect of training on intelligence or academic achievement was not clearly demonstrated. On the basis of these findings, one must conclude that visual-motor training, as set forth by Kephart and Getman *and as implemented by the researchers*, is apparently of little instructional value. As a result of this, the assumptions upon which the programs are based (i.e., that visual-motor adequacy is important to cognitive success and that visual-motor processes can be developed through this type of training) remain unvalidated.

There remains the possibility that perceptual-motor training might be effective under some conditions. The positive results reported in a few of the studies should not be completely discounted. We recommend further research efforts and suggest that these be directed toward the following:

1. Identifying the characteristics of children for whom training is beneficial.
2. Determining the optimal amount of training necessary to produce real perceptual and/or motor growth.
3. Demonstrating that perceptual-motor processes can actually be improved as a result of training.

Until the merits of the activities are clearly demonstrated by carefully designed research, we maintain that these approaches must be viewed as highly experimental, nondata-based interventions.

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SUNLAND TRAINING CENTER, MIAMI

BKR Experimental Project for Preschool Children

The objectives for the planning year were as follows:

1. To develop a multifaceted, sequential educational approach including known techniques such as (a) behavior shaping, (b) motor-sensory training and (c) structured methods.
2. To design practices, methods and materials which can produce changes in individual children.
3. To demonstrate the effects of a twenty-four hour intensive training program on the development of preschool age (3-13 years) profoundly and severely retarded children including those manifesting behavior disorders.
4. To utilize teacher creativity and sensitivity in the classroom.
5. To utilize an interdisciplinary team approach.
6. To develop warm, personal relationships between children and adults.
7. To train cottage personnel and community parents in carry-over techniques.
8. To inform the community of the successful processes used in such training.

A maximum of eight children were served in the classroom during that year—five from the nursery and three from the community. The criteria for placement consisted of the following:

1. Age 0-8
2. Evidence of profound/ severe mental retardation.
3. Exclusion from training.

The children placed exhibited one or more of the following traits:

1. Untestable.
2. Profoundly or severely mentally retarded.
3. Behavior problems.
4. Not toilet trained.
5. Nonverbal.
6. Prone to frequent seizures.
7. Motorically handicapped.
8. Socially immature.
9. Visually handicapped.
10. Auditorily handicapped.

The following summary of the BKR Experimental Project outlines one attempt to effect positive change in the development of preschool exceptional children while involving the community at the state and local levels.

At the end of the year, two children moved into programs which had not been opened to them before.

In June of 1970, the project was funded for its first operational year. The objectives included the following:

1. To build a functional model for the broad education of such children by applying the results of applicable research and the findings gathered from two pilot studies held in 1968-1969 and 1969-1970.
2. To maintain a learning program within an existing residential institution.
3. To train teachers' aides, institution personnel, teachers, students, volunteers and, in modified procedures, parents and surrogate parents.
4. To develop measures for evaluation of the training program (psychologist-evaluator).
5. To plan with community agencies for facilitation of services for the preschool, multiply handicapped, severely/profoundly mentally retarded child and family.
6. To design diagnostic instruments.
7. To design instructional approaches which may produce change in attention, motor development, language development, concept development.
8. To determine the cost of such programs to community agencies.
9. To disseminate successful techniques, methods, and materials to other institutions, members of professional communities, parents, appropriate instructional material centers, and appropriate professional journals.

The criteria for placement in classes remained the same. The population was increased to 14-16 in this year with two nursery children transferred into regular Sunland Training Center, Miami, preschool programs during mid year and one new child from the community and one from the nursery added to the Project.

The Project became directly involved with these community agencies:

1. University of Miami, Mailman Child Development Center. A preschool class for severely mentally retarded opened in this center on March 1, 1971, staffed by two members of the BKR staff. This is a training and research center, with students from many disciplines being rotated through that Center.

2. University of Miami Comprehensive Health Care Project. A class was started on February 1, 1971, staffed by BKR to serve inner-city children who meet BKR criteria and who had no transportation to the class at the Sunland Training Center. Six children are served three days a week in 3-hour classes. Parent classes are also presented.
3. Dade Association for Retarded Children. The Project has set up home programs for children who have had no services offered and who for some reason (age, degree of physical handicapping) cannot presently fit into one of the classes. Parent classes have been offered. BKR has served in many consulting capacities for DARC.

There has been a steady upward movement of every child in the Project with social development being, in general, the area of greatest growth.

A Continuation Proposal was submitted for fiscal 1971-1972. The primary objective was to demonstrate more widely that a multi-basis learning program does effect changes in the development of preschool multiply handicapped, severely/profoundly mentally retarded children who are traditionally considered custodial. The stress in this year included:

1. The Sunland Training Center classroom as a demonstration and training model.
2. Continuation of classes in the community wherever feasible and, hopefully, the Dade County Public Schools will assign a teacher to one of these classes.
3. The five other Sunland Centers in Florida will each send a teacher and an aide to the Sunland Training Center Miami, for 5 weeks training. They will return to their respective centers and establish such preschool units. BKR will serve as consultants.

It is anticipated that, at the end of federal funding, the state and local communities will pick up the financing of these programs.

There is presently available from the staff of the BKR Experimental Project a staff training manual; a toilet training and feeding guide (in English and Spanish); and a research edition of an evaluation scale.

This project was funded under P.O. 90-538. Project Director is William J. Kirkpatrick, Jr. Project Staff Training Coordinator is Louise M. Bradtke. Katherine P. Rosenblatt is Coordinator of Community Services.

CLASSROOM FORUM

*Edited by Norma Boekel,
University of Northern Colorado*

PROBLEM 24

My class consists of young educable retarded children, ages 6 to 9. Our daily routine is frequently interrupted by mothers who drop in unexpectedly and uninvited. How can I discourage this without squelching their interest?

Parental interruptions should not be viewed as an invasion of privacy, but rather as a welcome deviation from the normal routine. You can teach the children to behave appropriately and manipulate the situation into something beneficial for all.

Let's examine the reasons for parents' "dropping in" at school—which occurs frequently in classes for the handicapped and especially in those that serve the youngest children. Behind the "Pseudo" reasons for visiting school are some very real anxieties. Perhaps these parents are still adjusting to the knowledge that their child is handicapped. Many parents experience "guilt feelings" which may be more aptly described as regret or concern for their children's welfare. Every contact you have with these parents may include an element of counseling.

Many adults associate a stigma with special education. When parents drop in for a visit, attempt to correct their misconceptions by demonstrating your program. When you emphasize the advantages of special education, these parents will gain confidence in you and in your ability to deal with their children.

Now, before the parents can escape, *put them to work!* You may have to resort to rather devious methods, but parental involvement can be the solution to many of your problems. Keep a box of "Activities for Visitors" filed on

3 x 5 cards on your desk. Note the following suggestions for activities aimed at parental involvement:

1. Make arithmetic flash cards.
2. Listen to children retell stories that have been read to them.
3. Help with the library.
4. Build storage boxes.
5. Assist with field trips.
6. Repair toys.
7. Clean the aquarium.
8. Assist with art lessons.
9. Teach ball skills.

Some tasks may seem menial, but all require time and skill. *Any* contribution made by parents will result in approval from the students and appreciation from you. Let's recognize education as a joint enterprise. Parents, too, are educators!

PROBLEM 26

My principal tells me I should try a "time out room" as an approach to behavioral problems. Does it work?

All readers are invited to send in their solutions to Problem 26. The April 1973 issue will summarize contributions by readers. Complimentary subscriptions will be awarded each month for the best solutions. Send your response to the Editorial Offices, *FOCUS ON EXCEPTIONAL CHILDREN*, 6635 East Villanova Place, Denver, Colorado 80222.

FOCUS ON EXCEPTIONAL CHILDREN back issues are available. Single copy of a back issue is \$1.00, while ten or more copies of the same issue are 50¢ each.

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